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ORIGINAL ARTICLES.

HOME TREATMENT OF TUBERCULOSIS BY MEANS OF HOSPITAL DISPENSARIES.[1]

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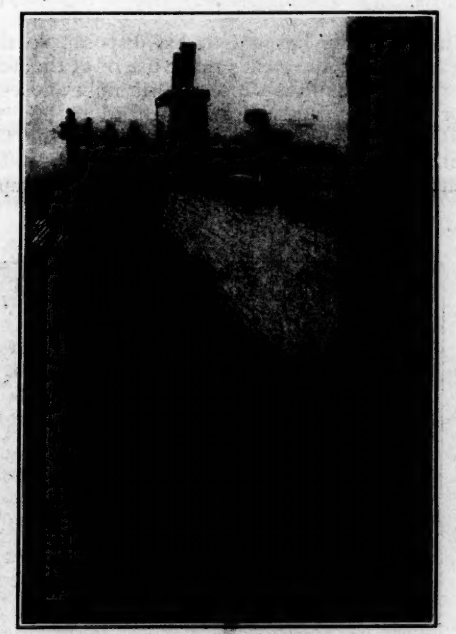
THE gentlemen who were present at the meeting of this Association last year will remember the paper by Dr. Otis, on Dispensaries for Tuberculosis and the interesting discussion to which it gave rise. Unfortunately for myself I was not present at the reading of the paper, but entered the room as the discussion was closing. Dr. Otis, however, kindly sent me a copy of the paper soon afterward, and I was so much impressed by it that I at once set about establishing clinics for tuberculosis in the out-patient departments of Bellevue and its allied hospitals. At that time cases of tuberculosis in those hospitals, as in hospitals generally, were treated by those in charge of the general medical clinics. Dr. Otis and some of the other speakers last year referred to the difficulties they met with in organizing a special dispensary for tuberculosis. The chief difficulty in my experience was in finding properly qualified men who were willing to devote themselves to a clinic limited to tuberculosis alone. Finally, however, I succeeded in securing the man who was probably the best fitted of any physician in New York to take up this new work, Dr. James Alexander Miller. Dr. Miller, some six months before, had established at the Vanderbilt Clinic, at the instance of Dr. Walter B. James, a system of more careful management of cases of tuberculosis than had before been customary.

Fig. 1.

Bedroom from which patient was removed to No. 3.

Fig. 2.



Air shaft supplying light and air to bedroom in No. 1, at bottom of this shaft.

The main features of this system were special histories and regular weekly records of all cases, detailed oral and printed instructions in regard to the disease, free distribution of sputum pouches, and a visiting nurse, who made written reports of the home conditions and cooperated with the physician to make these conditions conform as far as possible to the hygienic requirements for the treatment of this disease. With

[1] Read at meeting of American Climatological Association at Philadelphia, June 3, 1904.

the kind permission of Dr. James, who recognized the larger field we had to offer, Dr. Miller came to Bellevue. He brought to us not only the experience acquired by him in the Vanderbilt Clinic, but also the interest and enthusiasm which, as Dr. Otis has said, are so necessary in this work. In return, we have placed all the re-

Fig. 3.

Bedroom to which patient was removed from No. 1.

sources of the hospital at his disposal, so that in addition to the means made use of at the Vanderbilt Clinic. he is supplied with milk and eggs for such patients as cannot afford to buy the extra nourishment required, and also the tent cottage that is shown in the photographs. The tent is in the open grounds of the hospital, upon

Fig. 4.

Patient on fire escape.

the banks of the East River, and is designed for those patients whom it is desirable to keep in bed because of elevation of temperature or for other reasons, or for whom a few weeks' training in habits of life seems desirable.

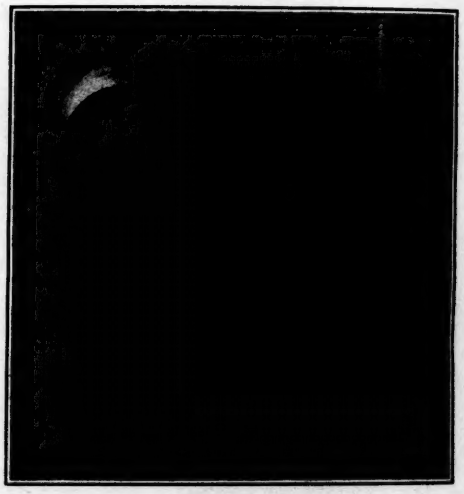
Dr. Miller has recently prepared a report of the work of the tuberculosis clinic for the first four months of this year, to be published in the Annual Medical and Surgical Report of the Hospital, and a summary of his observations may be of interest. The objects of the Tuberculosis Clinic as stated by him are as follows:

1. *Careful and Thorough Medical Attention* to each patient in a separate clinic by physicians especially interested and experienced in this disease.

2. *Systematic Investigation and Supervision of the Home Conditions* of each patient.

3. *Education of the Patients and Their Families* in the principles of good hygiene and the prevention of the spread of infection.

Fig. 5.



Another view of patient on fire escape. (See Fig. 4.)

4. *The Study of the Social and Economic Conditions in* connection with the medical aspects of each case and the relief and amelioration of those which are unfavorable.

5. *The Opportunity for Scientific Investigation* and clinical experience for physicians and students.

Fig. 6.

Patient in hammock on roof.

Taking up these objects in turn, let us see what has thus far been accomplished.

1. *Careful Medical Attention.*—When a patient is referred to this clinic he is sent to a

separate room for tuberculous patients, the temperature and pulse are noted by the nurse in attendance, and the history is taken by one of the physicians upon special forms upon which all the points to be investigated are printed. A careful examination is then made, including chest measurements, laryngeal examination, if at all indicated, and careful weighing with the patient stripped to the waist. The results of this examination are recorded on the history sheet, the physical signs by the graphic method. A positive, or even probable, diagnosis being made, the name and address are given to the nurse as a case to be visited. The sputum is sent to the Department of Health for examination. The patient is informed of the nature of his disease, of the principles of its treatment, and the dangers of infection, and printed circulars of instruction are given him for reference. The general principles of fresh air, rest, and extra nourishment

Fig. 7.

Patient in extension chair on roof.

are explained in detail. As a rule the diet advised is a mixed one, with two quarts of milk and four raw eggs additional each day. This number is gradually increased to the point of increase in weight or the tolerance of the individual, but the maximum quantity prescribed is about three quarts of milk and eight to ten eggs daily. The amount of fresh air and rest that these patients can obtain is, of course, very variable. It is almost always less than is desirable, but by persistent emphasis upon their importance much can often be accomplished.

Medication plays a minor rôle in the plan of management. Cathartics are most necessary during overfeeding, and stomachic tonics are very useful. Cod-liver oil is given freely as a food during the winter months. Creosote is very seldom prescribed. Symptoms such as distressing cough, pain, night-sweats, etc., must be relieved. The general principle, however, is to use as little medication as possible. Pocket sputum pouches, and more substantial ones for home use, are given to each patient from the drug room. Patients are requested to return to the clinic once a week and a record of their weight, temperature, pulse and general condition is made at each visit. Careful physical examination is made at least once a month, but, of course, as much oftener as any indication suggests.

Fig. 8.

Tent at Bellevue, showing proximity to river.

2. *Thorough Investigation and Supervision of the Home Conditions* of each patient. This is best accomplished by means of visiting nurses who have had special training in district nursing as well as hospital work. At Bellevue there are two such nurses, Miss Damer and Miss Hopkins. Both are graduates of the Bellevue Training School and both have been active and successful in district work, the former with the Buffalo Charity Organization Society, the latter with the Charity Organization Society of New York. Under their direction one of the pupil

Fig. 9.

Tent at Bellevue, looking west.

nurses also helps in this work, which thus becomes a part of her training. Each new case is referred to the nurse, with any special instructions or information that may be thought advisable, and, after a thorough inspection of the home, a report is made out by her upon printed forms provided for the purpose and submitted to the physician in charge of the case, together with any suggestions which may occur to her as a result of her visit.

The general plan is to arrange the whole domestic economy to the best interests of the patient

and to provide against the dangers of infection to his household and associates. Careful and detailed instructions are given as to ventilation and the principles of fresh-air treatment, and practical demonstration is made of the proper method of disinfection of the bed clothing, eating utensils, and personal linen of the patient; also any necessary suggestions are made along the lines of general cleanliness and better hygiene. Thorough inquiry is made concerning the care which the patient habitually takes of his expectoration, and notice taken of the general attitude of the whole household toward the instructions given at the clinic. Investigation is made into the available facilities for taking a "rest cure" out of doors, and the fire-escape, the roof, and the nearest park are all considered from this point of view, and the results incorporated in the report. For a few patients we have been able to secure sleeping bags, reclining chairs, or hammocks, so that they may stay out of doors almost continually. (See photographs 4, 5, 6, and 7.) The family resources are also noted and recommendations for assistance are made accordingly. Oftentimes the "home" is absolutely unsuited to our purpose; if so, it is so stated and the actual conditions existing are described. Photographs 1, 2 and 3 show how the home conditions of the patient may be bettered by simply moving him from a dark interior bedroom to the sunny parlor of his own apartment.

3. *The Education of the Patients* and their families in the principles of good hygiene and the prevention of the spread of the infection. How this is accomplished by the constant reiteration of sound advice from physicians, nurses and printed circulars is apparent. During the past four months our nurses have visited 138 patients whose aggregate families number 621. Each one of these individuals is now a center of information in regard to the general principles of healthful living.

4. *The Study of Social and Economic Conditions* obtaining in each case. This means the correlation of all the available data obtained from the investigations of the physicians and of the nurse. Upon this study the physician bases his method of management of each case. This involves upon the part of the physician an intimate knowledge of all available resources. In our work we keep in close communication with all the sanatoria and hospitals which admit tuberculous patients and attempt to send suitable cases to the institutions best adapted to their needs. The regulations of the Health Department and Tenement House Department are studied and observed; the facilities offered by the Charity Organization Society, the United Hebrew Charities, the Association for Improving the Condition of the Poor, the various churches and religious societies, the Diet Kitchen Association and the Straus Milk Depots are all well known and constantly utilized. In addition milk and eggs from the hospital storeroom are given free to such patients as are found to be unable to sufficiently provide for themselves. Lately a tent cottage has been erected upon the hospital grounds, accommodating twelve patients, which is for the use of those patients in the clinic whom it is desirable to keep under observation temporarily, or for favorable cases for whom proper sanatorium or home treatment is not possible. The proper use of all these means is an essential portion of the treatment, and the responsibility for it rests with the physician, from whom it requires careful study and judgment.

5. *The Opportunity for Scientific Investigation* and clinical experience for physicians and students. This portion of the work has not yet been developed. It is proposed to take it up systematically next autumn and it is hoped that tuberculosis will be studied in this clinic along various lines.

The activities of Dr. Miller have been, in the main, limited to Bellevue, but we have fortunately been able to find capable and well-trained physicians to take up the work at some of our other hospitals. This is particularly true of Gouverneur, where a tuberculosis clinic was organized last October by two young women physicians, Dr Stella S. Bradford and Dr. N. G. Seymour. As a result of their efforts the number of cases has grown from one or two a day to ten or twenty a day. During the month of April 24 new cases were enrolled. The methods of management are very much the same as at Bellevue, except that we have not as yet obtained a trained nurse to visit the patients regularly at their homes, but we hope very soon to supply this deficiency.[1] Dr. Bradford has just submitted a report on the work at Gouverneur, which will be published in our annual report, along with that of Dr. Miller. Working under trying conditions that would have disheartened most men, she and her colleague have accomplished results almost equal to those obtained at Bellevue. In commenting upon the intelligence of some of the population of the East Side, Dr. Bradford cites the cases of the man who with perfect equanimity upset his sputum bottle in his pocket, and the woman who, on being told to hold her hand before her face when she coughed, promptly spat into it!

At Harlem Hospital, where the dispensary service is very heavy, a separate clinic for tuberculosis was opened three months ago, but the number of patients does not yet compare with that at Bellevue and at Gouverneur. Fordham, our fourth hospital, lies in the outskirts of the city, where there are but few out-patients, and no attempt has yet been made to separate the tuberculous from the other patients. We have asked Dr. Miller to supervise the work at all four hospitals, so that each may profit by the experience of the others, and at our meeting of next year I shall hope to present a report of the

[1] Since this paper was read an experienced nurse has been assigned to Gouverneur Hospital.

work more worthy of your attention than these rather disjointed notes of to-day.

I have been asked to say a few words as to results. Of course it is too early to talk of cures or even of arrested cases under a system of treatment which has been in force less than a year and with cases numbering less than 300. At Gouverneur, of the patients who have been under continuous observation, two-thirds have shown a gain in weight, and to-day I received a letter from Dr. Miller, in which he stated that of the patients in the tent cottage at Bellevue, all but one had gained from six to fifteen pounds in weight, with a corresponding improvement in all the other symptoms. The woman photographed in the steamer chair on the fire-escape had gained fourteen pounds in six weeks, though she had been considered a hopeless case. When in the course of the next year or two we shall be prepared to make a report, the results will no doubt be such as have been obtained elsewhere from the use of fresh air, rest and extra nourishment, combined with special study of the conditions of each individual case.

BONE AND CARTILAGE IN THE TONSIL.[1] [2]

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THE interest of the writer was first called to this subject some years ago by the paper of Stirling, hereinafter referred to, and a record has been made of the few instances of the condition since appearing in current literature. This interest was renewed two years ago by a personal experience, briefly as follows:

A woman of about thirty years, nurse, came for consultation in regard to frequent though slight sore throat. Examination showed moderately enlarged faucial tonsils. Their removal was advised and agreed to by the patient. The Mackenzie instrument was employed and the right tonsil removed without incident. A few days later the operation was repeated on the left side and as the blade of the instrument was driven home, the sensation was experienced of driving through some hard substance which, however, was easily pierced. Examination of the tissue removed revealed the presence of a small rounded tip of bone. Palpation of the tonsillar stump at once showed that this tip belonged to the styloid process, the remainder of which could be easily made out. It came nearly to the surface of the stump, but was covered thereby sufficiently well to prevent irritation, as was verified by a very recent examination. Palpation on the right side did not reveal anything abnormal. The case was therefore one of abnormal length and direction of the left styloid process, the tip of which had been removed by tonsillotomy.

Under normal conditions the styloid process has a length of 2½ cm. and extends from the under surface of the temporal bone downward, forward and inward. It is derived from the second branchial arch.

The recital of an unusual clinical experience is apt to start up other similar recitals, so that it soon becomes evident that a condition assumed by the first reporter to be rare is in reality quite common. It is not possible to say just how common the anomaly described really is. As a matter of fact but few instances are on record. One of the most striking is that of Richards, who, in the case of an elderly woman, found himself unable to sever the tonsil with a tonsillotome. Palpation showed a hard mass calling for the use of bone forceps. After this the tonsil was easily severed. The same condition, though to a less marked degree, was found on the other side. In Richards' case it was possible for him to detect bone marrow in the fragment removed. He appends a note from Prof. Thomas Dwight, of the Harvard Medical School, who states that ossification frequently extends down the stylohyoid ligament, thus apparently lengthening the process proper. To reach the level of the tonsil a length of from 5 to 6 cm. of bony structure would be necessary.

Three cases were reported by Stirling some years ago. Case I was that of a young woman with cheesy matter in the tonsilar crypts. On the right side there was a hard mass coming from behind the tonsil forward underneath it to the level of its anterior surface, ending in a point and forming a part of the side of the organ. The point was rounded and about an eighth of an inch in diameter, but broader and somewhat flattened laterally as it extended backward, outward and slightly upward. The finger in front entered the angle formed by it and the inferior maxilla and when pressed behind it entered another angle formed by its proximity to the right side of the vertebral column. There was present a tenderness from the pinching of the mucosa between the body and the finger. The second patient showed a slight protuberance just above and in front of the right tonsil; otherwise it was like the first case, but the condition was bilateral. The third patient was a brother of the second patient. Here also the condition was bilateral. The hard masses were altogether in the posterior portion of the tonsil and reached a level a full finger's breadth below the lower border of the organ. The mass in the third patient was more slender than in the other two cases, was distinctly cartilaginous in feel and was movable. In making his diagnosis, Stirling excluded calculi as not giving the conditions present; the masses might have belonged to the jaw but did not move with it. The finger could exclude the vertebral bodies. The masses were too far forward to come either from the base of the skull or to be regarded as spines on the posterior portions of the sphenoid wings. He concluded that they must be either the transverse processes of the vertebræ or the styloid processes and finally decided in favor of

[1] Paper presented at the Twenty-sixth Annual Congress of the American Laryngological Association, held at Atlantic City, June 2 to 4, 1904.

[2] Received for publication May 31, 1904.

the latter. He found one reference to the condition in Schech's book and references by the latter author to cases reported by Grube, Lücke and Weinlechner, but these reports were not accessible to the writer.

I do not know that any great importance attaches to the condition unless the projection should be long enough and the direction of the styloid process oblique enough to cause tonsillar irritation. In most, if not all, the cases reported the abnormality has been discovered accidentally. If after tonsillotomy the stump should not be sufficiently padded by the soft tissues there might be a condition awkward to relieve, but such relief could undoubtedly be afforded by the use of bone forceps, as in Richards' case. In the comments of Professor Dwight on Richards' case he notes that "it is perfectly in accord with all we know of the process of growth of organs that if a bony structure should encroach on the domain of adenoid tissue the latter should, so to speak, fold itself around it."

When we come to the question of bony deposits scattered through the tonsils we find a more voluminous literature, as the subject has been considered by several authors who have also found cartilage and have considered the two conditions together. Personally I have removed tonsils which on inspection showed masses too large and too hard to be regarded as foci of connective tissue and I have surmised that they might be cartilaginous, but this view has never been confirmed by microscopical examination.

Several years ago Walsham reported two cases bearing on this matter. The first patient was a man of fifty years whose senile tonsil showed scattered through it, at the base of the crypts, numerous small bony masses in the shape of nodules, rings and trabeculæ. They did not encroach on the lymph structure of the organ. The second case was that of a patient with an atrophied tonsil, a man of twenty-seven years. Through the lymphoid structure of the organ were scattered masses of cartilage large enough to be detected by the eye. In places it had been converted into bone. The matrix appeared sometimes hyaline, at other times fibrocartilaginous. The cartilage was in the form of nodules surrounded by strands of dense fibrous tissue which formed a sort of perichondrium. Some penetrated the lymphoid tissue and in one place they nearly reached the epithelial covering. Walsham regarded them as enchondromata, finding a close analogy between them and the small cartilaginous growths which sometimes develop about the branchial clefts and which are also found in the neighborhood of the ears; also analogous to the cartilage found in the parotid gland.

According to His, the tonsil is developed in the fourth month of fetal life by a simple infolding of the mucosa at a spot between the second and third branchial arches. This site remains visible in the adult tonsil as the operculum or triangular fold, which frequently extends over from the anterior faucial pillar, veiling the tonsil's antero-lateral aspect. As development progresses the primary infolding, which is the original lacuna, splits at its base into secondary lacunæ and the fully formed organ results from the swelling of the mesoblastic tissue and the early appearance of the lymph follicles. According to this view, the cartilage is of fetal origin, *i.e.*, is the vestigial rest of the second branchial arch. From this view Kanthack dissents, regarding the cartilage merely as a metaplasia of fibrous tissue. The enchondromata result from the starting up to renewed growth of these vestigial rests.

Walsham was able to find two similar cases reported by Roth and one by Deichert, who himself knew of two other cases. Walsham found the condition twice in thirty-four autopsies.

Wingrave found cartilage three times in examining two hundred tonsils. He regarded these deposits as identical in formation with the subpharyngeal cartilage of Luschka. As did Walsham, he found hyaline and white fibrocartilage imbedded in a dense connective tissue capsule, sometimes in the fibrous bed, sometimes in the lymph pulp of the organ. In one instance the cartilage was calcified.

Nösske found multiple bone and cartilaginous deposits in the deeper layers of connective tissue coating the tonsil. There was almost always a connection with the surrounding connective tissue as well as numerous transition pictures between the two. This author would include in etiology, inflammation, retrogressive changes and a sort of local predisposition.

Petroff examined the tonsils excised from a patient who had died of pulmonary tuberculosis, finding tuberculous foci and cartilaginous deposits as well. Further investigations on 40 tonsils removed from 22 cadavers of both sexes and varying ages revealed cartilage and bone in eleven, cartilage alone in ten and bone in one. All the tonsils showed a fibrous degeneration. He regarded the condition as due to a chronic inflammation with proliferation of connective tissue and deposit of lime salts.

Reitmann refers to the work of Pollak, who explained the formation of bone on the basis of "cretification" of tuberculous foci after an inflammatory process. To the process he gave the formidable name of "Amygdalitis hemorrhagica interstitialis chronica ossificans." Reitmann himself refers to 12 cases collected by various authors and examined three human embryos together with 50 tonsils removed from 37 individuals, the age limits being an embryo of thirteen weeks and a living patient of sixty-five years. Of the tonsils, 17, or 34 per cent., gave a positive result, showing that the condition may be more frequent than is generally supposed. His general conclusions are as follows: Cartilaginous nodules or their derivatives occur in the tonsils or surrounding tissues. They are generally hyaline, rich in cells but poor in basement substance, that is, resemble embryonal cartilage. In two instances retrograde changes were evident. Various stages of transformation from bone to cartilage

were found. Cartilage always lies free from any attachment to the skeletal frame. The condition found in one of the embryos allowed him to believe that he had to do with a derivative from the second branchial arch, arising not in continuity but as an offshoot. He does not regard this theory of origin as positively proven by any evidence thus far brought forward, nor is he certain that these vestiges can serve as a starting point for either enchondromata or osteomata.

Very recently Zuckerkandl has stated that cartilage develops independently of the skeleton in the connective tissue of organs when mechanical relations demand the presence of such tissue, as for instance in the Eustachian tube. In many of the lower orders of life only fibrous tissue is found in this latter structure. He reports the interesting fact of finding in a pharyngeal tonsil removed from an adult lion, first, a superficial adenoid layer; second, a connective tissue layer, and third, glands between the two. In the connective tissue layer cartilage were found between the glands and follicles. It is not a constant feature in this animal as it was absent in a dead-born animal and also in an embryo.

An interesting case has been studied by Rosenberg and Töpfer, the former reporting the clinical and the latter the histological details. A peculiarity of the case was that it was the first one in which muscular fibers were found in the tonsil. They appeared in the connective tissue capsule of the organ and certain of them had thrust themselves into the trabeculæ running in from the capsule. Töpfer considered them as belonging to that group called "musculi tonsillares," which normally are on the outside of the capsule. The tonsil showed hyperkeratosis and it is surmised by the writer named that the fibers were the cause of irritation to the tonsilar substance resulting in the hyperkeratosis. In the same organ were found foci of hyaline cartilage in the connective tissue portions. Against the theory that these were due to developmental disturbances during fetal life, that is, of the branchial arches, is the fact that first development of the tonsil begins between the fourth and fifth month, at a time when little or no vestiges of the branchial arches remain. Moreover, the cartilage was found in the purely connective-tissue portions only of the organ, never in the lymphoid pulp and, finally, the deposits were multiple. In a second tonsil, two larger deposits were found and here could be recognized the transition stages in the change from connective tissue to cartilage. The fibers of the latter separated, allowing the cells to project, then swelled, forming a network in the meshes of which were the cartilaginous capsules in which the cells lay. These had gone over from the spindle-shaped to a more polygonal form. How long this process may require, and what is its exciting cause, we have no means of knowing.

Töpfer observes that if the cartilaginous foci are merely aberrant deposits from the branchial arches we ought to find them in all sections of the organ, but we do not so do. Or, it might be supposed that they had spread out through the tissue into which they had grown. Against this view was the fact that each deposit stood by itself with its fibrous envelope, that is, the assumed perichondrium, but everywhere there was a certain connection between the cartilage and its connective tissue environment. Hence Töpfer's main proposition is that the deposits result from connective tissue metamorphosis. In some sections the transition seemed to have gone farther than above described, so that it appeared as if the groundwork of bone had been laid down preparatory to the deposition of lime salts.

With certain staining agents pictures were seen suggesting an earlier colloid state, later a mucoid state. It is difficult to say whether or not this mucoid stage is a transition between colloid and the material out of which hyaline cartilage is formed. The whole process may be a retrograde one, that is, the retrogression of cartilage into mucoid matêrial. Evidence suggesting this was found in the fact that in the middle of the areas out of which the cartilaginous deposits originated, there was a focus of softening or a small hollow filled with mucin and some round cells.

This transition from connective tissue to cartilage is not, according to Töpfer, to be looked on as a late or senile change in the former, for the same process has been found in children. Since the deposit comes from a cartilaginous matrix, it must be regarded as an enchondroma, while the hyperplastic mass from which comes the pre-existing connective tissue is an ecchondrosis.

The author just named thinks that the results of examination of tonsils vary according as the organs are removed from the cadaver or the living body. Virchow has suggested that the connective tissue which has newly formed itself as the result of chronic interstitial processes is the matrix of the later enchondroma. Owing to the numerous inflammatory processes going on in the tonsils it is conceivable that cartilage should arise on the same basis. Wingrave found cartilaginous nodules in chronic hyperplastic organs, but other observers have found them in normal organs.

Finally, it may be noted that the Eustachian tube is formed from the first branchial arch; a portion of the cartilage might be shut up in the tonsil, since, according to Kölliker, the first position of the tonsil is in a line with the tube, but somewhat more dorsal. Zuckerkandl found cases showing cartilaginous nodules in the vicinity of the tubes, especially in the salpingopharyngeal ligament.

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THE DISTINCTION BETWEEN FRACTURE OF THE NECK OF THE FEMUR AND EPIPHYSEAL DISJUNCTION IN EARLY LIFE, WITH REFERENCE TO ITS INFLUENCE UPON PROGNOSIS AND TREATMENT.[1]

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My contention that fracture of the neck of the femur is relatively common in early life, is now generally admitted, but there is a strong tendency among German writers to class these cases as epiphyseal separations rather than simple fractures. Hoffa, for example, in a recent article (*Zeitschrift f. Ortho. Chir.*, Vol. II, 1903), has collected eighty-four cases from literature, including ten reported by me in 1897. Of these but four are admitted to be true fractures. In other words he would consider all cases of this type as epiphyseal fractures, unless it can be directly demonstrated, as by operation or autopsy, that the injury is not at the epiphyseal junction.

It might seem perhaps that as both forms of injury are properly classified as fracture, the exact situation is unimportant. In fact, I should not again protest against this classification, however unwarranted it may be by the evidence were it not that an accurate diagnosis may have a deciding influence upon the treatment. It is well known that epiphyseal disjunctions in other situations are uncommon as compared with fracture in early life, as is well illustrated at the elbow-joint. It is difficult to produce an epiphyseal disjunction experimentally, even when the force is adjusted with this end in view. If then, epiphyseal separation is relatively so common at the hip-joint, it can be explained only by anatomical or pathological predisposition. Anatomically there is no predisposition, since the neck is much smaller than the junction. Even when fracture occurs during the reduction of a congenitally displaced femur, the manipulation which of all others should induce separation, the clinical evidence is in favor of fracture of the neck. And this fracture was demonstrated in the only case that to my knowledge has come to autopsy. (Wilson and Rugh, *Am. Jour. Ortho. Surgery*, February, 1904.)

An epiphyseal junction is not a weak point in the bone during childhood unless as the effect of local or general disease. It is however, relatively weak in adolescence, as the period of consolidation approaches, when the protecting rim of cartilage which covers it has been reduced to an approximately adult thickness. In fact, it will be found on investigation that nearly all the anatomical evidence in favor of epiphyseal separation dates from the two cases reported by Sprengel, (*Archiv für klin. Chir.*, B. 47, 1898, S. 805.), of patients aged respectively seventeen and eighteen years, and is of similar character, that is to say an evident predisposition to this particular form of injury was present.

[1] Read before the American Orthopedic Association, June 9, 1904.

Admitting that either epiphyseal separation or fracture may occur as the result of violence, the following are the chief distinctions between them, and in introducing the subject it should be stated that although complete fracture and, in rare instances, complete separation of the epiphysis may occur, it is far more often incomplete and it is this class that is under especial consideration.

Fracture of the neck of the femur is usually the result of direct violence. The majority of the patients are healthy children. The disability is immediate; it lessens as repair proceeds and in a few months the patient may be practically well except for a slight limp and limitation of motion dependent upon the depression of the femoral neck (traumatic coxa vara). Epiphyseal disjunction is usually a more gradual process. The patients are almost always adolescents, very often of the overweighted or overgrown type. The injury is often slight, of the nature of a twist or strain or misstep, so slight in fact that it may pass unnoticed. The first symptoms are limp, slight stiffness, and discomfort rather than pain referred to the hip and thigh. These symptoms may persist for weeks or months then, usually after overexertion or other injury, the disability may suddenly increase, an indication of a more extensive secondary fracture.

It may be noted then that in childhood fracture of the neck of the femur caused directly by violence does not differ essentially in its history or symptoms from impacted fracture in the adult, except that the disability is less and recovery more rapid. On the other hand, the characteristic symptoms of partial epiphyseal separation and the class of patients in which it is most common resemble closely those of adolescent coxa vara.

There is also a well-marked distinction in the physical signs. In traumatic depression of the neck of the femur, there are shortening and outward rotation of the limb with elevation and prominence of the trochanter. Motion may be practically free except in abduction which is much restricted, particularly when the limb is flexed.

In partial epiphyseal separation the outward rotation of the limb is more marked, but the shortening is less, usually not more than half an inch. As a rule the limb is completely extended and in many instances a resistant swelling is apparent in Scarpa's space. The trochanter is not as prominent, but motion is much more limited than in fracture. In many instances it is almost completely restricted by muscular spasm, and there may be effusion within the joint and sensitiveness to pressure.

The distinction between the symptoms and physical signs in the two classes of cases may be explained by the situation of the injury and its effect upon the function of the joint. If the neck of the femur is forcibly depressed as the effect of an incomplete fracture at some distance from its articulating extremity, motion, when repair is advanced will not be restricted other than by the distortion of the neck, thus primarily in abduction, inward rotation and, to some degree, in

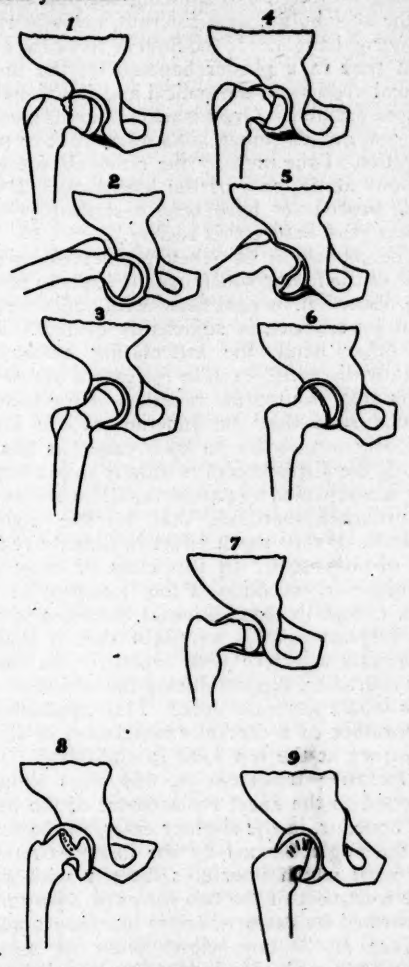
flexion. Corresponding to the depression of the neck there are of course shortening of the limb and an abnormal projection of the trochanter, which may be made more noticeable by flexing and adducting the thigh. If, however, the epiphysis, forming the cartilaginous extremity of the bone, be displaced, as it usually is in these cases, downward and backward, there is direct interference with the movements of the joint, increased by the sympathetic irritation about the injured part. The neck of the femur projects from the shaft at the normal angle. The epiphyseal extremity remains within the acetabulum and it is the upper and anterior extremity of the neck that forms the projection in Scarpa's space.

In some instances the downward displacement of the epiphysis which is still firmly adherent to the neck, may not be greater than a quarter of an inch, and although the characteristic symptoms may be well marked, shortening may be practically absent. Even in these early cases the muscular spasm may be so great that the joint may be practically fixed. The symptoms in fact, very closely resemble those of disease of the joint except that the limb is usually completely extended and pain is absent when the patient is at rest; whereas flexion is the almost invariable attitude of disease and neuralgic pain is a common symptom. In this class of cases the original injury may have caused simply a rupture of the protecting covering at the epiphyseal junction, and in the absence of further injury it is possible for complete recovery to take place. In most cases, however, as the patient continues to use the limb, this displacement is progressive, being accompanied by a process of partial repair; thus the head of the bone is usually firmly adherent to the neck.

It is apparent that the history and the symptoms that have been described resemble those of coxa vara rather than of the ordinary form of fracture. It may be mentioned also in this connection that there are two classes of coxa vara, one in which the entire neck is depressed, and the other in which the deformity is in the newly formed bone on the outer side of the epiphyseal cartilage. In this latter class the symptoms may be aggravated by actual fracture at the point of weakness, and in such cases it is practically impossible to distinguish accurately between these and true primary traumatic epiphyseal separation. In fact, it is probable that many of the cases reported as epiphyseal separation are of this type.

In many instances it is possible to demonstrate the seat of the injury by means of the X-ray. In ordinary fracture the neck as a whole is depressed, while in epiphyseal separation one can often distinguish the neck projecting at a normal angle from the shaft, the deformity showing clearly at its inner third.

One may conclude then that when fracture at the hip-joint follows a fall from a height, or other considerable violence, the injury, as in older patients, is usually of the middle or outer portion of the neck. In adolescence on the other hand, when progressive disability follows slight injury and when the physical signs are similar to those described, one may suspect fracture at the epiphyseal junction.



1. Fracture of the neck of the femur. 2. Restoration of the normal angle by forcible abduction. 3. The limb in normal position. Figs. 4, 5 and 6 illustrate complete separation of the epiphysis of the head of the femur treated by the same method. 7. Illustrates slight separation in which protection might assure a satisfactory result. 8. More extreme displacement, that can only be treated by direct operative reposition. This contrasted with fracture of the neck (Fig. 1) illustrates the greater disturbance of joint function that must inevitably result. 9. A form of epiphyseal coxa vara often induced or aggravated by injury in which the deformity is most marked on the outer side of the epiphyseal cartilage.

As has been stated, the importance of an accurate distinction between the two forms of injury may have a direct influence upon treatment, assuming that its object is the restoration of normal form rather than palliation of the symptoms. If the neck of the femur has been forcibly depressed and partly broken through, the rela-

tions of the head of the bone and the acetabulum are not particularly disturbed. If then, one has the opportunity to treat such a case before consolidation is completed one may, by forcibly abducting the thigh and utilizing the upper border of the acetabulum as a fulcrum, actually restore the normal angle. If the limb be fixed for a sufficient time in a plaster bandage at the limit of normal abduction, anatomical and functional cure may be assured. Or, if consolidation is complete, one may, as in simple coxa vara, restore proper elevation of the neck by the removal of a wedge of bone at the base of the trochanter. Both of these procedures have been described by me in papers read before this society.

The importance of remedying depression of the neck of the femur which usually leads to progressive distortion, as contrasted with palliative treatment by support, is sufficiently evident. If, on the other hand, the articulating extremity is actually displaced, even to the extent of one-third of its area, the mutual relations of the bones are so disturbed that the function of the joint is seriously impaired. In such cases, as has been stated, the displacement is usually so gradual that it is accompanied by partial repair; it seems hardly probable therefore that forcible abduction could have very much effect in directly reducing the displacement. In this class of cases direct operative intervention is the treatment of selection, except in those unusual instances in which the displacement is so slight that it does not materially interfere with function. In cases of this character, support during the period of weakness would assure a cure. This emphasizes the importance of a careful examination in all cases of injury at the hip joint in childhood.

Operative treatment in this class should be directed to the exact replacement of the head of the bone, or, in the slighter cases, to the removal of the angle formed by the inner extremity of the neck which interferes directly with flexion. The treatment of the two forms of injury may be illustrated by cases where it has been applied.

Case I.—A boy, eight years of age, was brought to me by his family physician in October, 1901. Three weeks before he had fallen a distance of fifteen feet injuring the left hip. A few days later he was able to limp about, but there was no further improvement. On examination the typical symptoms of fracture were present, viz., the trochanter was elevated and prominent, there was one-half an inch of actual shortening and marked limitation of abduction. When the patient was anesthetized abduction was found to be limited to one-half the normal range by direct bony impact. Under traction the limb was slowly and forcibly abducted to the normal limit, the resistance giving way under direct pressure. The limb was fixed by a plaster bandage in the attitude of extreme abduction. In a few days the patient began to walk about and at the end of four months, when the spica was removed, the X-ray picture showed a restoration of the normal angle. Later examinations have demonstrated a functional and anatomical cure.

Case II.—A girl, six years of age, was seen in August, 1902. Three weeks before this time she had fallen from a second story window and as complete disability persisted she was brought in arms to the Hospital for Ruptured and Crippled. The physical signs, the treatment and the final results were practically identical with those of the previous case.

Partial traumatic epiphyseal separation may be illustrated by two cases which will demonstrate the contrast both in symptoms and treatment.

Case I.—A girl, fifteen years of age, began to limp and to complain of stiffness about the right thigh. No cause could be assigned other than a slight fall which was not accompanied by immediate symptoms. Eight weeks later, as the disability became more marked, she was admitted on November 23, 1903, to the Hospital for Ruptured and Crippled. The patient was of the overgrown adolescent type. The disability was complete, the limb was fixed in extension and rotated outward, there was marked muscular spasm with pain on passive motion. The shortening was not greater than a quarter of an inch. Diagnosis of partial epiphyseal separation was made and the joint was opened by the ordinary anterolateral incision. The epiphyseal extremity of the femur was found to be displaced downward and backward for about a quarter of an inch, exposing a sharp angular projection of the extremity of the neck. There was congestive synovitis which accounted for the muscular spasm, and the projecting bone interfered directly with the movements of the joint, particularly in flexion. This projection was removed with a chisel, the wound was closed and a plaster-of-Paris bandage was applied. This was removed six weeks later and the patient began to go about on crutches. At the end of three months she was allowed to use the limb and at the present time there is no disability on walking. Flexion is still limited, but not to a sufficient degree to interfere with function.

Case II.—This patient, a tall boy fifteen years of age, was dragged for half a block by a street car. He suffered more or less discomfort about the right hip, but continued at his daily work for two months when the stiffness and limp had so increased that he was practically disabled. He was admitted to the Hospital for Ruptured and Crippled on December 28, 1903. A diagnosis of epiphyseal separation was made on the following grounds: One-half an inch of shortening, marked outward rotation of the limb, which was fixed by muscular spasm in an attitude of extension, a resistant swelling was apparent on the anterior aspect of the joint. The joint was opened by the anterolateral incision and the inner extremity of the neck, which had caused the swelling already mentioned, presented itself. On extreme outward rotation the upper and anterior portion of the cartilaginous covering which had been displaced downward and inward could be

seen, still firmly adherent to the under third of the neck. A section of bone was removed from the neck, sufficient to allow a thin chisel to pass between it and the head. With this the epiphysis was completely separated and while it was pressed forward the limb was rotated inward until the head was exactly replaced. The wound was closed and a plaster-of-Paris bandage applied. At the end of six weeks the boy was allowed to go about on crutches, and soon after the plaster bandage was removed. The limitation of movement that followed the operation gradually lessened, and at the present time there is complete anatomical and functional cure.

These contrasting cases illustrate the importance of exact diagnosis and appropriate treatment, since it is evident that forcible abduction would have been useless in the cases of epiphyseal separation and that the open operation would have been unnecessary in the cases of fracture of the neck of the femur. The ease with which the head of the femur was replaced in the second case of epiphyseal separation and the complete cure that followed, indicate that this operation should always be performed, at least in recent cases, rather than excision, the routine operation of German surgeons, which from the functional standpoint must be ultimately disappointing in its results.

It may be noted that while it should be easy to distinguish ordinary fracture of the neck of the femur from epiphyseal separation it may be impossible to differentiate the latter from epiphyseal coxa vara which is most often seen in adolescence. The essential anatomical difference is this: in epiphyseal separation directly caused by injury there is, it would appear, a sliding downward of the head including the epiphyseal cartilage, exposing a sharp angle at the inner extremity of the neck; in epiphyseal coxa vara the deformity is in the newly formed bone on the outer side of the cartilage, similar to adolescent knock knee, a deformity rather rounded than angular. Such deformity although it may not be caused by injury may be aggravated by it, even to the extent of actual fracture through the weakened bone. The principles of treatment might be essentially the same as in traumatic cases, but the prognosis would be of course less favorable and the mechanical treatment must be of longer duration. It would appear that in any form of coxa vara, the line of the epiphyseal cartilage is changed from a direction from without inward, to one above downward, thus predisposing to injury.

I do not at this time propose to discuss the subject of coxa vara in general, but it would appear that while rachitis, present or remote, is practically always the cause of bilateral coxa vara, injury as an exciting or aggravating cause of the unilateral form is far more important than is generally believed.

One may include under fracture of the neck of the femur, in early life three classes of cases: (1) Simple, direct fracture of the neck, usually incomplete, occasionally complete. (2) Direct epiphyseal disjunction, usually incomplete, in rare instances, complete. (3) An indefinite class, in which the deformity is at or in close proximity to the epiphyseal junction. The patients are of a type in which the so-called static deformities of adolescence are common, and injury may be predisposing, aggravating or direct cause of the distortion.

Of classes 1 and 2, that is, of undoubted direct fracture of the neck of the femur, thirty cases have come under my observation. Five of these are classified as epiphyseal disjunctions. Three were males and two females. All were adolescents, the youngest thirteen years and the oldest sixteen. In three instances the nature of the injury was indefinite, apparently a slight fall. One patient was injured in a game of football, and one was dragged by a street car.

The twenty-five cases of facture of the neck of the femur present a decided contrast both as to age and character of the injury. Twenty were children from two to ten years of age. Five were adolescents, 11 were males and 14 females.

Nature of the Accidents.—One patient fell from a sixth story, two fell from fourth stories, one from a third story, two from second stories. Seven fell from heights of at least fourteen feet, four fell down flights of stairs. One was run over. One was knocked down by a street car. One was thrown from a carriage. One fell from a bicycle. One fell from a swing, and in three cases the history was indefinite. These patients were, almost without exception, healthy children. The accidents were severe, and the disability was immediate. In 22 of the cases the fracture was incomplete, in three it was complete.

The third class has been usually included under coxa vara, of which I have the records of 63 cases, 42 males and 21 females. Of the entire number but 12 were bilateral. Many of the cases were examined before the X-ray was available for diagnosis, but it is estimated that in about one-quarter of the cases the deformity was near the epiphyseal junction, and in many of these, it was presumably induced by injury,—epiphyseal fracture. The preponderance of males over females, and of unilateral over bilateral cases, is certainly significant as indicating the importance of injury in the etiology of coxa vara. If these indefinite cases are to be classified as primary epiphyseal fracture, it still further emphasizes the importance of injury as causing distortion of the neck of the femur.

In this connection attention may be called again to the fact that it is from this class particularly that the majority of the cases of epiphyseal fracture that have been reported has been drawn. It is in this class that the cases are so commonly mistaken for hip disease, and it is in this class that early diagnosis and protective treatment might be efficacious. It is perhaps, therefore, the one of greatest interest to orthopedic surgeons.

The object of this paper is to call attention to

two forms of fracture of the neck of the femur, of which an accurate diagnosis may have an important influence upon treatment. Simple fracture should be treated by fixation at the limit of normal abduction, an attitude which implies restoration of the depressed neck to its normal position.

Partial epiphyseal separation should be treated by direct operative reposition of the head. Excision, which is at present in such favor with German surgeons, should be an operation of necessity rather than of choice.

One should never be content with mechanical support however efficient it may be in relieving the immediate symptoms, for, recognizing the fact that normal function is dependent upon normal form, one should always aim to remedy deformity whenever it is practicable.

THE RECTAL ADMINISTRATION OF THE NEWER HYPNOTICS.

BY MORRIS MANGES, M.D.,
OF NEW YORK.

IN an unpublished paper, read before the City Hospital Alumni Association in 1899, I presented the results of a rather extensive series of cases in which the newer hypnotics had been given in suppositories.

While the value of the rectal administration of opium and its derivatives, the bromides, chloral, etc., has long been recognized and appreciated, the newer hypnotics such as sulfonal, trional, hedonal, etc., have been rarely used in this way. Yet cases not infrequently occur when great good could be accomplished if these drugs could be administered in some way other than by the stomach.

By way of illustration I might cite a recent experience of this kind: I was asked by Dr. Cabot to see a young woman upon whom a cholecystectomy for acute gangrenous infection had been performed by Dr. Lilienthal, and who was in a desperate state on the third day after the operation. The patient was an intensely nervous woman, whose incessant vomiting threatened not alone the success of the operation from the continual tugging at the sutures, but her life from the exhaustion. She had an idiosyncrasy against morphine, bromides per rectum had been tried in vain, chloral could not be given and the condition of the stomach prevented the administration of any drugs. I advised the rectal use of twenty grains of veronal dissolved in some sherry and water; within an hour this quieted the patient and half an hour later she fell into a sleep, lasting ten hours, from which she awoke in a condition permitting her to take nourishment by stomach. The subsequent course of events was an absolutely uneventful and rapid convalescence.

While this case was an extreme one of its kind, yet cases often occur in which, for reasons which need scarcely be discussed in detail, the stomach or skin may not be the best available route for the administration of hypnotics.

It may seem strange that insoluble preparations like sulfonal, trional and other hypnotics should be absorbed by the rectum; but clinical experience proves that this is the case and that the speed of the absorption is about the same as that which takes place in the stomach, even when they are administered in cocoa-butter suppositories. To quote from my former paper: "All are not equally active, since I found that hedonal, chloralose and chloretone were so slightly soluble as to be practically worthless in this connection; on the other hand, sulfonal acted much more powerfully than trional. Heroin, chloralamide and phenacetin were also readily absorbed. The use of combinations of sulfonal, or trional, sulfonal and phenacetin gave excellent results."

The suppositories in all these trials were of the ordinary size (fifteen grains of cocoa-butter). No irritation of the rectum was ever observed.

I might add that most of these observations were conducted in the wards of the Mt. Sinai Hospital, and the fact that even in the unsuitable environment of a hospital ward the hypnotic effect could be obtained in a fair number of cases established the value and possibilities of this method of administration. My subsequent experience with the rectal administration of these hypnotics has confirmed these observations, and now that the list of hypnotics has been enriched by the addition of veronal, which is distinguished from the others of this group by its free solubility, the value of this method of administration deserves to be more clearly recognized than it has been.

For rectal use veronal need not be administered in suppository form, but in solution either in warm milk, or preferably, in diluted sherry, to which a little salt or sugar has been added to increase the speed of absorption. The dose of veronal for this purpose is somewhat larger than when administered by mouth, the average dose for an adult being fifteen to twenty grains.

THE MEDICAL TREATMENT OF APPENDICITIS.[1]

BY A. J. HALL, M.D.,
OF WASHINGTON, D. C.

IT IS so generally admitted that appendicitis is a surgical disease that it is more than likely my suggestion that its treatment has a therapeutic aspect will meet a prompt negative. However, so many cases recover without surgical interference that it seems to me therapeutics have not received the credit to which they are clearly entitled.

A review of six papers advocating medical treatment,[1-6] which have come to hand during the last year, has failed to reveal anything satisfactory in the way of statistics, the number of cases not being given and the mortality being roughly estimated at something between five per cent. and ten per cent., but the writers express themselves as entirely satisfied with their results. In these papers I failed to discover a method or

1 Read at the Annual Meeting of the American Therapeutic Society, New York, June 2, 1904.

treatment that was generally applicable; some writers making no mention of local applications; some using them hot and others using them cold; some used opium and anodynes and others advised against their use or made no mention of them; some fed by mouth, others by enema only;[8] some used cathartics, and others did not. No mention is made of medication with a view of directly influencing the diseased process, "general principles" and the "expectant plan" being phrases used where, in my opinion, the details which carry a case to a successful issue should be minutely explained. The writers usually admitted that under certain circumstances they would advise operative interference.

The appearance of these papers shows that there is a strong sentiment in favor of medical treatment, as of course only a small percentage of its advocates are enthusiastic enough to express their sentiments in print. In the matter of statistics, I am as much at fault as the writers referred to, as I have kept no case records and have no figures to offer; still, the impression made upon my mind by a number of cases in which there has been no surgical interference and no death, is, that appendicitis may be treated medically with a fair prospect of as good results as those obtained by the surgeon, the proportion of recoveries being so large that the physician can safely count upon successfuly carrying his patient through the first and second acute attacks, and that the proposition to operate should be considered in the interval between the second and prospective third attacks.

Without touching upon the very interesting subjects of etiology, pathology, symptomatology and diagnosis, any one of which affords ample material for a lengthy paper and interesting discussion, I will show the actual condition the physician is called upon to treat by quoting a few figures from a paper by a surgeon. Dr. Winslow[7] operated upon three cases on the second day and found two of them to be pus cases and one clean. Of 14 cases operated upon during the first seven days, ten were pus cases and four were clean. Between the eighth and thirteenth days, three cases were operated upon without finding pus. On the fourteenth and twenty-first days, five cases were operated, pus being found in four. Of these cases, 39.5 per cent. were clean and 60.75 purulent. Of the 12 cases operated during the first five days 75 per cent. were purulent. Supposing that these figures will hold good in the average run of appendicitis cases, then it may be said that the class of cases which have been treated medically with satisfactory results includes every variety, from the endo-appendicitis, or mild catarrhal form, to the para-appendicitis, or severest form, in which the inflammatory process has involved all the tissues of the appendix and extended to surrounding structures with the formation of abscess. This statement is borne out by the experience of Dr. Lewis,[8] who reports eight cases, each of which developed abscess, the abscesses discharging through the bowel, and all recovering under medical treatment.

Having diagnosed acute appendicitis, my method of medical treatment is as follows: The patient must be placed at rest in bed, and this rest made as absolute as possible, an essential element in this regard being the installation of a nurse who can have a good influence over the patient, relieving him, if possible, of all care and certainly of all muscular effort on his own behalf. The abdominal muscles may be relaxed by flexing the thighs and supporting the knees by pillows. The vomiting and peristalsis of the bowel may be reduced to the minimum by withholding all food for the first twelve or twenty-four hours and the omission of anything in the form of cathartics or purgatives. A copious enema of soapy water or sweet oil should be used every four hours and a hot flax-seed meal poultice must be maintained over the whole of the abdomen, replacing it every two or three hours, night and day, until the temperature is normal. This application reduces the pain to such an extent that the use of anodynes internally or hypodermically can be avoided, especially if we convince the patient that the pain will probably subside in a day, and that medication might obscure symptoms that would be of vital interest during the next few hours. The amount of relief afforded by the poultices in the matter of nausea, vomiting, pain and fever is the index of the success or failure of the treatment.

In acute appendicitis fever is always present and the pulse rate increased; and the most important guides of the progress of the case are the temperature and pulse rate, a steadily increasing pulse rate being a sign of ill omen, while a diminishing rate gives assurance of a good prognosis.[9] The only counter indication for the use of enema, or at least one calling for great care in its use, is the involvement of the lower bowel or rectum in the inflammatory process, which occurs when the appendix is deeply seated in the pelvis, and doubt upon this point should be cleared up by a digital examination of the rectum. The rest and quiet of the bowel can be further promoted by the avoidance of repeated palpations, or even percussions, in an effort to demonstrate a swollen appendix or its surrounding abscess wall, the existence of which may be taken for granted, and the size need have no bearing on the case.

When the vomiting subsides the patient may be fed liberally by the mouth with milk, water and soups. The larger the amount of liquids consumed the better, as they not only nourish the patient, but by means of the diuresis produced render material aid in the elimination of toxic materials. Creosote, minim one, in two drams of lime water, may be administered every two or three hours, and arsenite of copper, grain $^1/_{100}$ every three hours. The creosote is eliminated, in part at least, by the kidneys, and must therefore, while in solution in the blood, be brought into most intimate contact with the inflamed area, and does, I believe, exert a salutory effect upon the inflammatory process and the toxic elements generated thereby. The arsenite of copper I employ as an intestinal antiseptic, and I am convinced that it

prevents or diminishes tympanitis and the tendency to vomiting, and has a marked anodyne effect. If the vomiting does not subside, and should it become stercoraceous, occlusion or paralysis of the bowel is indicated, and operation is the only hope of relief.

Between the twelfth hour and the end of the second day symptoms will usually begin to mitigate, the pain, temperature, and pulse rate all gradually subsiding, the patient passing on to uninterrupted convalescence, the case terminating in complete recovery in from seven days to three weeks. On the other hand, if the pain should suddenly disappear, the temperature drop to normal or below, the tumor diminish in size, the abdomen become tympanitic, the pulse rate remain high or increase in frequency, and symptoms of shock develop, it may be inferred that the abscess has ruptured; and if it has not discharged into the bowel the symptoms may be expected to recur with increased severity in a few hours, and another stage, acute diffuse septic peritonitis, is reached, where operation is indicated, though under very unfavorable circumstances. The condition is so hopeless in fact that some surgeons have refused to operate, partly because it may be attended by one or more secondary abscesses, yet, even this condition has been successfully tided over by reinaugurating the treatment at first outlined, using stimulants liberally and large amounts of normal salt solution hypodermically.

To recapitulate: An efficient medical treatment of acute appendicitis is as follows: Rest in bed, hot poultices to the abdomen, a liquid diet, chiefly composed of milk, four to six enemas a day, internally the arsenite of copper and creosote. Purgatives and opiates are not to be used.

Conclusions—The tendency of appendicitis is toward recovery. All acute cases should be treated medicinally until, after mature deliberation, it is shown that operation offers a better prospect for recovery. In recurrent cases operation should be advised during the interval after recovery from the second attack.

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The Non-transmission of Acquired Immunity to Poisons.—In an experimental investigation of the phenomena of immunity to abrin poisoning. to which it is possible to adapt fowl by means of intraperitoneal injections of this poisonous proteid obtained from the seeds of wild licorice, A. LUSTIG (*Arch. Ital. de Biol.*, May 31. 1904), found that this immunity acquired by either parent can not be transmitted to the offspring. He concludes therefore, that there is no such thing as the hereditary transmission of immunity, and that the result obtained by Ehrlich can be interpreted only in that immunizing substances may pass from mother to fetus by way of the placenta.

THE CORRECTION OF ABNORMAL CONDITIONS OF THE BLOOD RELATIVE TO SURGICAL OPERATIONS[1]

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FREQUENTLY the surgeon is called upon to operate on patients who, when they first present themselves, are in no condition to stand an operation on account of deficient quantity of blood or the poorness of its quality. On the other hand, it is desirable that the patient regain his normal condition as soon as possible after operation, whether the abnormal condition of blood is due to the operation or not.

The ideal remedy is that which will restore the normal condition of the blood in the shortest time with the least disturbance to the rest of the body, the digestive system particularly. Less necessary are palatability and cost of the remedy. To determine which of several preparations best fulfilled the above conditions was the purpose of this investigation.

All of the preparations used being recognized as good, Dr. A. J. Ochsner gave me permission to prescribe them as I saw fit to certain of his patients in Augustana Hospital. Only those cases were selected whose appearance indicated the need of a hematinic. As often as possible similar cases were paired off, one patient being given one preparation and the other patient another, and the results compared. The cases were paired according to pathological condition, age, sex, general condition and the condition of the blood as to hemoglobin and erythrocytes at the beginning of treatment. The preparations used were malt with iron and manganese; malt with iron, quinine and strychnine; Blaud's pills and the preparation known as pepto-mangan-Gude.

After watching the effect of the medication on the patients, and observing the records, it is seen that Blaud's pills acted quickly, but constipated; the malt combinations caused nausea in a few patients, and the malt, manganese and iron combination constipation in nearly all. The pepto-mangan, given in milk, was agreeable to take, and in no case did it cause nausea or constipation. While in two cases the Blaud's pills acted more quickly than pepto-mangan in two similar cases, on the whole the latter gave better and quicker results than any of the others, and at the same time caused no digestive disturbances in any of the cases.

Although the investigation was undertaken for the purpose of finding the best hematinic for surgical cases, it was tried in one case of chlorosis and in several obscure medical cases.

The following table shows the results obtained in all those cases where Gude's preparation was given. One to four drams were given in milk to each case, three times a day. The hemoglobin

1 Received for publication June 2, 1904.

was estimated with Von Fleischel's hemometer and the erythrocyte count made with the Thoma-Zeiss apparatus. The first blood count was made previous to operation in all surgical cases, and the last a short time before the patient's discharge from the hospital. The second count was never made immediately after the operation because of the temporary derangement due to the anesthetic and the loss of blood:

Name.	Age.	Diagnosis.	Date.	Erythrocytes per 1 c.c.	Per cent. of Hemoglobin.
1.— G. N.[1]	53	Carcinoma of stomach.	9 /29 /03	2,920,000	33
			10 /12 /03	3,400,000	43
			10 /25 /03	3 260,000	42
			11 / 8 /04	2,520,000	36
2.— Mr. L.[1]	49	Carcinoma of stomach.	10 /29 /03	2,665,000	27
			11 /23 /03	2,000,000	28
			12 / 5 /03	2,540,000	27
			12 /19 /03	2,300,000	26
3.— Miss J.	17	Acute menorrhagia.	12 / 4 /03	2,310,000	36
			12 /20 /03	3,565,000	44
			12 /27 /03	4,160,000	49
4.— Mrs. E. K.	33	Menorrhagia.	12 / 7 /03	4,340,000	44
			1 /10 /04	3,565,000	64
			1 /18 /04	5,100,000	82
5.— Mr. S.	23	Neurasthenia(?)...	12 /16 /03	4,060,000	60
			1 / 7 /04	4,260,000	65
			1 /14 /04	4,560,000	75
6.— Mr. K.	35	Tuberculosis of mesenteric glands. .	11 /15 /03	3,825,000	62
			12 /10 /03	4,826,000	68
			1 / 4 /03	4,716,000	66
7.— Mrs. P.	23	Pelvic abscess	10 /25 /03	4,060,000	60
			11 /23 /03	5,100,000	69
			12 /11 /03	4,975,000	78
8.— Mrs. A.	34	Pelvic abscess	12 /10 /03	3,195,000	53
			12 /29 /03	4,293,000	58
			1 /11 /04	4,560,000	78
9.— Miss A. J.	16	Chlorosis.	10 /25 /03	3,010,000	45
			11 /12 /03	4,950,000	65
			11 /28 /03	5,676,000	80
10.— Mrs. H.	40	Myoma of uterus . .	7 /15 /03	2,100,000	42
			8 /17 /03	3,900,000	55
			9 /15 /03	4,500,000	80
11.— Johnny L.	13	Tuberculosis of hip	12 / 1 /03	2,680,000	45
			12 /29 /03	3,600,000	55
			1 /20 /03	4,100,000	62
12.— Mr. E P.	21	Tuberculosis of ankle.	10 /29 /03	4,310,000	66
			11 /10 /03	4,850,000	71
			1 /23 /04	5,166,000	75
13.— Johnny F.	9	Extensive burn and infection of surface.	11 / 9 /03	3,560,000	50
			11 /25 /03	3,900,000	56
			1 /23 /04	4,362,000	68
14.— Miss E. B.	17	Perforative appendicitis.	11 /25 /03	3,600,000	55
			12 /26 /03	4,000,000	65
			1 /22 /04	4,250,000	69
15.— N. N.	29	Suppurative appendicitis.	12 /20 /03	4,200,000	60
			1 / 2 /04	4,400 000	66
			1 /20 /04	5,120,000	75
16. — Mr. B.	28	Chronic appendicitis.	1 / 2 /04	3,565,000	62
			1 /10 /04	4,320,000	70
			1 /23 /04	4,800,000	78
17.— Mr. S.	37	Gangrenous appendicitis.	10 /10 /03	3,300,000	45
			10 /27 /03	3,350,000	45
			11 /27 /03	3,010,000	40
18.— Miss W. J.	29	Empyema.	11 /20 /03	2,740,000	44
			12 /20 /03	3,070,000	52
			1 /22 /03	3,820,000	60
19.— Mr. P.	44	Cholelithiasis	11 /23 /03	3,560,000	57
		Chronic appendicitis.	12 / 4 /03	4,100,000	68
			1 /12 /04	4,640,000	78

In the nineteen cases tabulated there is an average increase of 800,000 erythrocytes and of 14.5 per cent. hemoglobin. This improvement was during forty days on an average. The usual time a patient stays in the hospital is twenty-one days when the case is of ordinary severity from a surgical standpoint. Such cases were placed on tonic treatment and showed rapid improvement, but of such cases only one (Case 16) is noted because it might be urged they would improve equally fast with or without a tonic.

It is seen from the above table that even in the cachexia of carcinoma there is a temporary improvement, which shows that in the use of this tonic we are dealing with a powerful hematinic. In Case 17 there was no improvement, the patient dying shortly after the last count. At the autopsy I found a pyogenic abscess in the liver as large as an orange and about 200 c.c. of pus below the right kidney, which explained the retrogression. In all of the other operated cases the improvement was steady and marked, especially in uterine diseases accompanied by loss of blood. In the case of chlorosis (Number 9) the improvement was remarkable, the patient being discharged cured in a little over a month, at which time all the symptoms had disappeared.

[1] Incurable.

ADDISON'S DISEASE, WITH AND WITHOUT ADRENAL TUBERCULOSIS.[1]

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I AM well aware of the strong protest which the above title would have called forth from certain prominent medical writers of two decades ago, and which may still be made by some writers of our own time who, like their predecessors, hold to the so-called "unity" of this disease. This belief rejects from the category of Addison's disease all cases in which the pathological lesion is aught else but a tuberculosis of the adrenal glands. For example, Greenhow,[1] in his admirable Croonian lectures of 1895, in which he studies 330 cases thus diagnosticated, accepts only 103 as perfectly typical, because in only that number were there found tuberculosis of the adrenals without any organic disease of any sort outside of these glands. To these he adds, with reservation, 80 more, 16 as being probably incompletely reported in certain details, and 664 others which, while showing the full clinical picture of Addison's disease, did have lesions outside of the tuberculosis of the adrenals, which lesions gave rise, in his opinion, in many cases to symptoms of their own, and in a few instances modified or obscured some of the usual symptoms of Addison's disease. Two of the groups which Greenhow rejected were thrown out because of the lack of complete conformity to the Addison complex, in that in one case there was no disease of the adrenals, and in the other group a disease non-tuberculous was found. Certainly the rejection of cases of Addison's complex arising from cancer of the adrenals, because the disease was not tuberculous, is hardly to be taken as proof that Addison's disease can never arise except from adrenal tuberculosis.

Wilks was also an adherent of this view of the unity of Addison's disease, though it is to be remembered that Addison[2] himself was of the opinion that not only one fibrocaseous lesion but others, such as cancer, might produce the symptoms.

[1] Read at the Association of American Physicians, Washington D. C., May 11, 1904.

Dr. Dyce Duckworth[3] expresses his general adherence to what he calls the doctrine of the Guy's Hospital school, that the lesion of this disease is a specific and tuberculous one, and says: "It appears probable that continued research into the nature of the specific deposit and changes met with in Addison's disease of the adrenals will render it certain that these changes are always of a tuberculous nature." Yet, despite this dogmatic statement, he admits some of the difficulties in the way of the simple unity of the disease, and more than hints that a broader pathogenesis may have to be sought for it.

Now, the term Addison's disease is to be considered to indicate a clinical syndrome, consisting of bronzed skin, constitutional disturbance, gastro-intestinal irritation, and usually progressive weakness. The bronzing is the most conspicuous feature, but not the solely essential one. It has been said to be an indirect rather than a direct adrenal symptom. It may even be absent, though, if so, the disease can hardly be diagnosticated ante mortem. It has been said that the bronzing bears somewhat the same relation to the rest of the disease that the eruption of scarlet fever does to the other manifestations of that disease. Both the bronzing and the rash may be absent, though very exceptionally. But the eruption alone is not scarlet fever, nor is the bronzing Addison's disease. Each, plus its own allied symptom-group, warrants the respective diagnosis.

With this very proper precaution as to diagnosis, Addison's complex is certainly observed in more than one sort of pathological process. Admittedly the great majority of cases are found in tuberculosis of the adrenals.

But Lewin's[4] well-known figures are to be borne in mind. Among 281 cases he found: typical cases of Addison's disease with sound adrenals, 20 per cent.; typical cases of Addison's disease with diseased adrenals, 80 per cent.; disease of adrenals without bronzing, 28 per cent.; disease of adrenals with bronzing, 72 per cent.

Let us, then, in the present study adopt the following classification:

I. Cases with skin bronzing: (*a*) Adrenal tuberculosis, the commonest type of Addison's disease; (*b*) Adrenal disease, non-tuberculous: Atrophy, chronic interstitial inflammation, cancer, occlusion of adrenal vein, hemorrhages; (*c*) No adrenal disease: (1) With disease of the semilunar ganglion; (2) without disease of the semilunar ganglion; (3) pigmentation, usually without other symptoms of Addison's disease.

II. Cases without skin bronzing: (*a*) Adrenal tuberculosis: (1) With tuberculosis elsewhere: (2) without tuberculosis elsewhere; (*b*) Adrenal disease, non-tuberculous: (1) Cancer; (2) tumors; (3) necrosis, etc.

The cases of Addison's disease which I have to report, and which are limited to such as have post-mortem evidence to sustain them, fall under the first two of the above categories. Three of them correspond to the commonest type, showing well-marked adrenal tuberculosis, with small amount of tuberculosis elsewhere in the body. The fourth case is of greater interest, as being clearly one in which there was absolutely no tuberculosis of the adrenals, but a simple and extreme atrophy.

Case I.—Mr. H. S., aged forty years, seen in November, 1897, with Dr. Clement, of Roxbury, to whose courtesy I am indebted for the history. Patient had always enjoyed good health. Several years ago had a severe injury to the foot, followed by inflammation and suppuration through the sole. Always had a dark complexion, but for a year past had been growing darker, as observed by his friends. Dr. Clement was called to see him the last of February, 1897, at which time he complained of great weakness, loss of appetite, nausea, and vomiting. About a year before this he began to lose flesh and strength; at times was faint and nauseated, particularly on moving or rising. During the summer he was quite miserable, but went away and improved, gaining ten pounds in weight. After returning in the autumn he said he "felt quite well." Four weeks after that he began to fail rapidly, though he continued to work up to three weeks of his death. Never had a cough. Skin pigmentation began about this time. The skin was a quite uniform mahogany color over most of the body, and there were dark patches on the mucous membrane of the mouth. The skin was that of a dark mulatto, the hands and face being the darkest part. No mottling of the skin, but a uniformly deep mahogany color. His emaciation was not extreme. He lived about a week after first calling medical aid; the nausea and vomiting continuing until exhaustion caused his death. His mind was clear to the last, long after his pulse at the wrist had ceased. At autopsy both pleural cavities were obliterated by adhesions with a few small, hardened, tuberculous areas at the apex of lung. There were no other evidences of tuberculous disease than in the lung apices and the adrenal glands. These were removed with the kidneys, and Dr. W. T. Councilman kindly examined them, and reported as follows: "Two kidneys and a portion of apex of lung brought for examination. At the apex of the lung there are circumscribed, dark-pigmented radiating cicatricial areas, and about these various small, miliary, caseous foci. Both kidneys and adrenals present. The right adrenal is firmly adherent to liver. The gland enlarged; on section showed a central area of caseation with partial puriform softening, and around this dense cicatricial tissue in which miliary foci can be seen. The fat is apparently hyperemic and extends into the tissue. None of the adrenal tissue, as such, can be made out. In the kidney immediately bordering this the cortex is white, swollen, somewhat softened, and in the cortex at one point there is an obvious extension of the process. At this place no separation can be seen between the adrenal tissue and that of the kidney. Elsewhere there is no lesion in the kidney. The left adrenal gland easily separated from the kidney. It is reduced to the size of a filbert, and in this there are caseous areas and cicatricial masses. There is no

evidence in either adrenal of any remains of the glandular structure."

Case II.—A. A., male, single, aged thirty-five years, Syrian, pedler, entered Boston City Hospital February 20, 1903. History of some illness two years ago, with cough, vomiting, and fever. Says he made complete recovery. Worked until three weeks ago, then chilly, slight cough, headache, backache (which last he ascribed to carrying heavy bundles). Patient is undersized, not well developed. Temperature, 102° F.; pulse, 104; respirations, 28. Skin throughout the body is very swarthy, evenly. This color was supposed to be a racial peculiarity. The patient spoke little English and no friend visited him. Nothing could be learned as to any recent increase of pigmentation. Pupils were equal and reacted well. No hemiplegia; tongue protruded straight. Respiration over both apices in front is harsh, without râles. Over both bases behind equally subdued, without râles. The examination was otherwise negative, save for a markedly scaphoid abdomen. Kernig's sign present; no Babinski. Patellar reflexes equal and present. Attempted extension of left leg causes pain in lower lumbar region. Leucocytes, 16,400. The following day there was only slight patellar reflex; some rigidity of lumbar muscles.

February 23 there was great restlessness, with some vomiting. Lumbar puncture was done, and 50 c.c of slightly flocculent fluid withdrawn, some tension within the canal being shown. This fluid proved to be sterile.

The patient became drowsy; there was considerable retraction of the head with flexion of the lower extremities, and he died on February 24, two days after admission.

The autopsy showed adherence of right pleura at base and both apices. Few small, old tubercles at both apices. No tubercles were found in brain or meninges. There was chronic fibrous thickening around the veins of the sulci. Vessels of the base were normal. The lateral ventricles and the fourth ventricle contained an increased amount of clear, straw-colored fluid. The pia, especially over the cortex, contained many scattered pigment spots, which were thought to be due to diffused modified hemoglobin. There was no evidence of intracellular pigment beyond a moderate number of the pigment and detritus-containing phagocytes so frequent in this region. A small ischiorectal abscess was present.

The left adrenal was a large, tuberculous mass, 5 cm. by 2 cm., varying from calcareous to puriform in constitution. Right, similar but not so large; size, 2 cm. by 3 cm. The diagnosis of Addison's disease was not made in this case during life, but the constitutional symptoms and swarthy color of the skin, taken in connection with the findings of the autopsy, warrant the diagnosis.

The absence of demonstrable tubercles in the meninges was, in view of the clinical symptoms and of the hydrocephalus, a surprise. The presence of considerable pigmentation on the pia is interesting in view of the statement of Duckworth, that it is doubtful if pigment is ever found deposited in any internal organs in Addison's disease, though he quotes one observation by Carrington of pigment in the pia mater.

Case III.—Autopsy by Dr. F. B. Mallory, who kindly gives me notes of the case. Patient, a woman, aged thirty-three years, well built, fairly well nourished. The clinical symptoms had consisted of progressive weakness; the duration about a year. The attention of the physician had apparently not been attracted to the adrenals. Hair rather light in color; skin dark in color, like that of a brunette. Areola of nipples dark. Conjunctivas slightly pigmented. Bronzing general. Gall-bladder and ducts normal. Bile flowed easily into duodenum. Pancreas, stomach, and intestines apparently normal. Adrenals each contain a caseous mass less than 1 cm. in diameter. Besides this, small areas of caseation and calcification. Thin, small masses of fibrous tissue. Both glands much diminished in size. No trace of adrenal tissue. Small, flattened, caseous nodules in semilunar ganglion. Several adjoining glands enlarged.

Anatomical Diagnosis.—Chronic tuberculosis of adrenal glands, semilunar ganglion, and of adjoining lymph nodes.

Case IV.—Adrenal atrophy with Addison's disease. I. E. P., female, aged thirty-five years, born in Germany; housework. Had measles, smallpox, chicken-pox, and scarlet fever when young. Rheumatism at eighteen years. Has been well since. Patient states that pigmentation of skin has come in past year. Since last summer has been run down. Complains of pain in feet and ankles, extending up to knees. Feet have been swollen at times. At times has had dull pain in her hands. Gets out of breath easily. Gets up once at night to pass water. Eyesight not very good, especially in right eye. No cough. Appetite fair. Digestion is good. Bowels constipated. Chief complaint is weakness.

Physical Examination.—Well developed; cachexia; pale. Face covered with irregular pigmented areas, varying in size from 1 mm. to 5 cm. in diameter, occupying old smallpox scars.

Abdomen.—Not distended. Considerable voluntary spasm, so that palpation is difficult. No masses felt. Separation of recti.

Skin.—Irregular pigmented areas scattered over entire cutaneous surfaces. Pigmentation most marked in axillas, groins, abdomen, and back.

March 2.—Liver edge just felt in full respiration. Movable kidney on right felt with great distinctness. Chest and heart negative. Marked diffuse brownish pigmentation back of neck, axilla-scapular regions. In lumbar region it is more markedly macular. Marked pigmentation at folds of knee-joints. Face is now marked with pigment in each cicatrix, which patient says was not present one year ago. Tuberculin test negative, but not to be considered, owing to unreliability of tuberculin used.

March 5.—Since admission has shown marked

general weakness. Complains of general pains in shoulders and extremities. Nauseated and vomited on several occasions. Yesterday afternoon up in a chair for short time. No apparent change in condition noticed afterward. About 11 P.M. patient found in a state of collapse. Heart action slow and weak. Pulse (radial) barely felt. Extremities cold. Marked pallor; very much excited. Emotional, groaning and crying out persistently. Cries due to fright from weakness—not from pain. Failed to respond to stimulation, and died at 4:05 A.M.

Autopsy, thirty-two hours post mortem, by Drs. F. B. Mallory and R. L. Thompson. Body length 152 cm. Body of a slender, gracefully-built woman. Lividity of dependent parts. Pupils 6 mm., equal. Rigor mortis present. No edema. Over the face and neck are closely set brown macules, mostly discrete, 0.5 cm. to 1.5 cm. in diameter. There is a slight brownish tint to the skin over the abdomen and about the axillæ.

Peritoneal Cavity.—Very little omentum or retroperitoneal fat. Serosa pale in color, normal in appearance. Right kidney lies directly under gall-bladder, and is freely movable. Mesenteric lymph nodes slightly enlarged, grayish-red in color. Appendix 6 cm. long; retrocecal; has a mesentary to tip. Diaphragm extends to fourth space on left, fourth rib on right.

Pleural Cavity.—There are a few fibrinous adhesions about the right apex. Remainder of cavity normal.

Lungs.—Voluminous; show the usual carbon tracery. Posterior portions somewhat congested. At the right apex pleura is thickened, and there is an old fibrous nodule, 3 cm. in diameter, the center of which is filled with cheesy material surrounded by thick fibrous wall. The remainder of the lungs is dark red. On section considerable blood-stained fluid exudes on pressure. Bronchi contains sticky, mucoid material.

Kidneys.—Weight, 230 grams. Cortex, 6 mm. Capsule strips readily, leaving smooth surface marked with stellate veins. On section kidney is pinkish-red in color. Cortex and pyramids show normal differentiation. Glomeruli seen as fine, glistening dots. Fresh section shows large amount of fat in small and medium-sized droplets in basement membrane of tubules.

Adrenals.—Very small in size, both together weighing less than 5 grams. Medulla practically not to be made out. Right with considerable connective tissue weighs 2 grams; left, 2.25 grams.

Microscopical Examinations of Adrenals.—The lesions consist in atrophy of the gland with destruction of the adrenal cells, marked fibrous change, and areas of lymphoid and plasma-cell infiltration. A greater part of the atrophied gland, both cortex and medulla, is replaced by fibrous tissue. Other portions show narrow areas, in which the remnants of gland tissue, detached from the basement membrane, and in various degrees of degeneration. These detached cells lie in connective-tissue stroma, which is infiltrated with lymphoid and plasma cells. The lymphoid and plasma cells sometimes form definite focal areas in which may appear an occasional adrenal cell. Bloodvessels are injected, walls not thickened. No evidence of tuberculosis could be found in either adrenal.

ADRENAL ATROPHY.

The case last reported belongs to a category, not large, of simple atrophy of the adrenals. As such cases are likely to be challenged by a believer in the "unity" of the diseases I append a brief report of a few other cases.

Barlow[5] reports a case of a woman, aged forty-two years, in whom both the adrenals together weighed less than 0.5 drachm. There was also gumma of the left kidney. There was brown pigmentation, most marked on the neck, behind and in both axillas, around the nipples, flanks, and groins, also in the mucous membrane of the mouth. The inner side of the knees and the dorsum of each foot showed an irregular mottling of darker pigmentation. The abdomen showed a dark line from pubes to ensiform. She had had a recent pregnancy, terminated by delivery of a stillborn child, but the pigmentation had antedated the pregnancy and developed rapidly since its close. There was fever (99° to 102° F.), vomiting, and death.

F. Roloff[6] reports a case in which there was characteristic Addison's disease in a man, aged twenty-two years, in whom this pigmentation had begun thirteen years before, but who had felt practically well till five days before his death. The post mortem revealed only an extreme atrophy of both adrenals without the slightest tuberculosis. There was also no lesion of the similunar ganglion.

Philips[7] reports a very similar case, where pigmentation had begun fourteen years before death, but for seven years had been unaccompanied by any symptoms. The adrenals were atrophied, not tuberculous.

Both these writers have apparently independently made a collection of all similar cases from the literature, which together amount to fourteen. In all of these tuberculosis was absent from the adrenals and in only three was there tuberculosis of any part of the body; in two cases no adrenals were found. To these 14 cases of adrenal atrophy with Addison's disease the one above reported adds a fifteenth.

Rolleston[8] calls attention to the fact that the adrenals may diminish in size in old age, but in his 1,050 post mortems found them small in only six patients under forty-five years of age. These showed no signs of Addison's disease. But he adds that he has never seen the extreme atrophy described in some cases of Addison's disease in which the organs were reduced to the size of peas.

CANCER OF ADRENALS.

In his original paper Addison included three cases of secondary carcinoma of the adrenals, and one in which a secondary carcinomatous nodule

blocked the adrenal vein and caused hemorrhage into the capsules. These he later wished to remove from the category, and ascribed their share in the production of the symptoms to the proximity of the lesions to the sympathetic.

Greenhow rejects nine cases of Addison's disease with adrenal cancer; six as not being Addison's disease and three as (while undoubtedly Addison's disease) *not* cancer, but tuberculosis of the adrenals. One of these reported by Gage, of Worcester, occurred in a woman whose breast he had removed for scirrhus two years before without recurrence. There were pigmentation and constitutional symptoms for six months. The adrenals were joined together by a thickened mass of enlarged and diseased lymphatic glands. This case is rejected on account of the lack of microscopical examination, but as many of the cases were before the days of the microscope and this test was not insisted on when the disease appeared to be tuberculous, the justice of this ground of exclusion does not appear.

Other writers like Rolleston do admit cancer as a possible cause of Addison's disease, though it is apparently rare and both glands may be destroyed by cancer without the production of symptoms. But the same is true of tuberculosis.

Hemorrhages into the substance of the adrenals have been noted as connected with Addison's disease, not only in the case reported by Addison himself and above referred to, but also by Virchow as seen in some rapidly progressing cases of Addison's disease.

ADDISON'S DISEASE, INCLUDING BRONZING AND CONSTITUTIONAL SYMPTOMS, WITHOUT DISEASE OF THE ADRENALS.

Lewin in his classic monographs finds, among a total of 281 cases, 68 patients with the symptom-complex, but without lesion of the adrenals, being something like 20 per cent. of the cases. Shall these be rejected because they do not conform pathologically to the more common type? Lewin sees no reason to reject them on this ground, although other authors are inclined to do so in similar cases.

Let us for a moment consider, as fairly illustrative of this class, the case of Merkel.[9] A man aged forty-six years, ill-nourished, shows weakness, decrepitude, anorexia, and a strikingly bronzed skin, including both the covered and uncovered parts of the body. Although he has always been dark, the pigmentation has greatly increased of late. He has dark spots on the buccal mucous membrane. Fever, vomiting, abdominal distress, diarrhea, increasing weakness, delirium, death. The ante-mortem diagnosis was Addison's disease, of which the buccal pigmentation (pointed out by Niemeyer as pathognomonic) seemed to the author the final and conclusive symptom. Post-mortem there was moderate internal hydrocephalus, with granular ependyma, miliary tuberculosis of the peritoneum and of an enlarged spleen, perisplenitis, perihepatitis, scant miliary tuberculosis of the liver, and fatty degeneration. Normal adrenals. Some enlarged retroperitoneal glands, but no caseous focus. The skin pigment was like that in Addison's disease, granular and distributed in the deep cells of the rete Malpighii. Yet Merkel, on the strength of the autopsy, eliminates this case from the category of Addison's disease, saying merely that the case destroyed for him the pathognomonic significance of pigmentation of the mucous membranes in connection with the rest of the Addison complex.

Another case instructive in this connection is that of Richon.[10] A girl of ten years, whose father died of phthisis and whose three brothers and sisters had died young, had complained for two months of weakness and anorexia, was depressed and always sitting or lying down. There was a darkening of the skin on the face, brow, commissure of the lips, trunk, back, glands, and buttocks. The backs of the hands were especially dark, chocolate colored; some darkening of the buccal mucous membrane. Consolidation of both apices. The injection of adrenal gland caused restlessness and vomiting, and was discontinued. She began to improve after three weeks and left the hospital much better. Returning after an absence of three and a half months, the pigment had gone from the face and was less on the rest of the body. In the middle of a month's stay in the hospital the pigmentation began to return. She again left the hospital, was taken with abdominal pain, vomiting, and cough. She was in bed for three months with vomiting and diarrhea. At the end of that time she entered the hospital again with no vomiting, but with increase in pigmentation and prostration, which in two months proved fatal.

The post mortem showed no lesion of either adrenal, either tuberculous or otherwise. There was tuberculosis at the apex of each lung. In the lower 40 cm. of the ileum there were ulcers with perforation. The semilunar ganglion and the ganglia of the solar plexus and the sympathetic nerves were all normal. They were surrounded but not pressed upon by voluminous lymphatic glands. Richon also quotes a case of Brault and Perruchet like his own case, except that theirs, while showing no lesion of the adrenals, did have a small tuberculous mass adherent to and penetrating the semilunar ganglion.

1. An important case is that of Jurgens,[11] which was that of the full Addison complex in a patient with a big aneurism of the aorta, which caused compression of both splanchnics and so atrophy and loss of function of both the corresponding adrenals. On the strength of this and another case, the author claims that in every case of true Addison's disease there is a gray degeneration of the nerve fibers of the splanchnics. This may be either protopathic, when one finds simple atrophy of the adrenals without other inflammatory appearances in these or other organs, or (more commonly) deuteropathic, in consequence of primary disease of the adrenals or pancreas.

2. These changes of the sympathetic system of the spinal ganglia and even of the cord have been recorded by many observers, but, on the other hand, have been definitely excluded in a sufficient number of cases to show that they are not essential to the production of the symptoms in question. Neusser says that minor degrees of such degeneration are found in various cachexias like pulmonary tuberculosis, and hence are of no significance. Most writers agree with Mann[12] that the structural changes which are usually present in the adrenals may or may not be followed by secondary changes in the semilunar ganglion.

3. Let us not forget, as Jaccoud has said, that bronzing without progressive asthenia and without visceral disturbances is not Addison's disease. Thus we shall not be misled into accepting the large number of cases which are on record as "simulating" Addison's disease, chiefly by reason of extensive skin bronzing. Certain affections of the female genital apparatus produce such bronzing, varying in extent from the pigmentation of pregnancy through the common chloasma uterinum to the pigmentations connected with marked ovarian disease, like that reported by Neusser,[13] where there was marked cystic degeneration of both ovaries with much skin pigmentation, which disappeared after the removal of the ovaries. Other skin pigmentations, sometimes extensive, are observed in diseases where cachexia may heighten the resemblance to Addison's disease. Still they are generally bronzing *plus* cachexia, not bronzing *with* cachexia. Such phenomena have been reported in scurvy; in chronic tuberculosis, especially of the peritoneum; in cirrhosis, particularly in Hanot's hypertrophic cirrhosis with diabetes;[14] certain pancreatic affections, with and without diabetes; in old amyloid disease; in chronic splenic enlargement with and without chronic malarial poisoning; in pellagra; in "vagabond's" disease; inchronic rheumatoid arthritis; in exophthalmic goiter.

TUBERCULOUS AND OTHER LESIONS OF THE ADRENALS WITHOUT ADDISON'S DISEASE.

The records of the Boston City Hospital show the following cases of adrenal tuberculosis without bronzed skin:

Case V.—(I. Medical.) S. W., female, aged twenty-seven years, single; housework; rheumatism three years ago. Two weeks ago gave up work, tired out, weak, pain in right ankle; temperature, 102° F.; pain and tenderness of joints with fever continued. Nothing detected in the lungs. She died after six days. There was stenosis and insufficiency of mitral valve and an acute endocarditis involving mitral and aortic valves. Passive congestion of the lungs. Old tuberculosis of old apices with miliary tubercles about them. Both adrenals enlarged, in both firm, completely caseous areas, surrounded by some dense tissue, a small portion of gland substance remaining in each. No record in clinical or autopsy notes of bronzed skin.

Case VI.—May 26, 1902 (II. Medical). S. D., aged nineteen years, single; elevator boy. Malaria two or three times. Typhoid years ago. For three weeks "tired out," abdominal pain, diarrhea. Consolidation left base behind. Temperature, 102° to 103° F. Bowels continued distended, but patient rather more comfortable. After nearly two months temperature still up. Prolonged expiration and crackling râles throughout right chest; friction, right axilla; few dry râles, left chest. Abdominal examination negative. Tubercle bacilli present.

July 24.—Sharp pain in left side; friction rub.

July 28.—Intestinal hemorrhage; spasm right rectus muscle, tenderness right of and below umbilicus. Spasm and pain intense. Pulse 140; temperature normal.

These conditions, with increased abdominal distention continuing, he was transferred to the surgical side for operation, which was performed August 2. There was found intestinal tuberculosis, with perforation. Fistula persisted, and he died August 8.

At autopsy there was found chronic tuberculosis of right apex; tuberculosis of mesenteric lymph nodes with softening; peritonitis; disseminated tuberculosis of lungs, spleen, and liver; tuberculosis of adrenal and bile-duct. The left adrenal was enlarged, particularly in the middle portion. On section inner and outer edges of adrenal appear normal, but interposed between these two is a firm, yellowish-opaque mass, granular on section, sharply circumscribed, and roundly contoured, which occupies the middle portion of the adrenal. In this area no traces of adrenal structure can be made out. It is impossible to demonstrate gross continuity between this adrenal and a large tuberculous lymph node in its proximity. The right adrenal does not appear to have been affected. No skin pigmentation.

Case VII.—T. M. (II. Medical). This case, adult male, pathologically showed nothing but a general lymphomatosis, with persistence of thymus and of red marrow. There was no tuberculosis demonstrated except in the right adrenal, which was firmly attached to the right kidney in a fibrous capsule, looking something like an elongated node. On section the upper part shows characteristic pigmentation of adrenal, but lower two-thirds for a distance of 3 cm. shows on section an opaque, yellowish induration, which completely obscures adrenal structure. A node embraced in the same capsule with the adrenal shows similar yellowish center, which has advanced to a trace of caseation. No skin pigmentation present.

Other cases of extensive adrenal tuberculosis without Addison's symptoms are not wanting. For instance, Rolleston found in his 1,050 postmortems 18 cases where there was caseation in the adrenals (eleven unilateral and seven bilateral) without evidence of Addison's disease.

Lewin found 53 cases where the adrenals were tuberculous without skin bronzing.

Roloff relates a case of total bilateral tubercular inflammation of the adrenals, without bronzing.

That in such cases as the foregoing a certain amount of adrenal function is still possible, through the existence of "adrenal rests," or accessory adrenals, is entirely possible. These adrenal rests may be found not only in the loose connective tissue, but embedded in the kidney or liver. Rolleston found five of these of the size of grains of corn on one side in one case where the adrenal was caseated.

Of other adrenal lesions without skin bronzing the Boston City Hospital records afford several cases. For example, there are three of cancer, as follows:

One of the cases was found in a patient dead with pneumonia and gangrene of the middle and lower lobes. Carcinoma was not diagnosticated during life, but was found post mortem in the liver, with metastasis in the omentum, mesentery, pleural surface, retroperitoneal glands and left adrenal gland. There was a healed tuberculosis of the left lung, but no skin pigmentation.

The other adrenal carcinoma was in a patient dying with palpable tumor of the stomach, with carcinoma demonstrated post mortem in the stomach, and with metastasis in the liver, lymph glands, rectum, and adrenal. No pigmentation.

In another case where the surgical diagnosis was intestinal obstruction, there was carcinoma of the cervix, with extensive metastasis, including the adrenals. No pigmentation.

There were two cases of atrophy—one in a patient dead of operation for ablation of the Gasserian ganglion for facial neuralgia. Pancreas and adrenals were all atrophied. No skin symptoms.

A similar atrophy of both adrenals and pancreas was found in a patient dead of organic disease of the heart, with dyspnea, edema, etc., but without skin pigmentation.

Four cases classified as "adrenal tumors" were apparently all of the same structure as the gland itself. One was a small tumor found in a man with fractured rib and lacerated liver. A second was in a man dead with chronic and acute pulmonary tuberculosis. The autopsy showed tuberculosis to exist also in the intestine, the peritoneum, and there was hyperplasia of the bronchial lymph nodes. Slight chronic peritonitis. The adrenals were normal in size. In the right one was a small nodule, size of a pea, in the substance of the gland, yellowish white, paler than the cortex to which it is connected, homogeneous, contour sharply marked. The left adrenal has a small cyst (5 mm.), irregular contour, and containing a small amount of brownish fluid material. Microscopically this shows cells like the cortex. Despite the extensive tuberculosis elsewhere, these tumors of both adrenals do not appear to have been of that character. The patient had presented marked cyanosis, but no skin pigmentation.

A third tumor was found in the left adrenal, having the dimensions of 2x1.5x1.2 cm. It was composed of yellowish tissue like the cortex. The right was normal. The patient had died "uremic," with amyloid kidney, aneurism of the aorta, and obliteration of the pulmonary artery. No skin pigmentation.

A fourth tumor was larger, occupying the right adrenal gland, which measured 6x5x3 cm. It was yellow and firm, size of a walnut, yellowish-gray, capsulated. Does not thread out. Blood content low. The patient died of chronic bronchitis. No skin pigmentation.

A case of necrosis of the left adrenal was found in a patient with pancreatitis, and is interesting chiefly from its pathological features other than those connected with the adrenals.

The patient, a woman aged forty-nine years, had acute abdominal symptoms, with a somewhat vague tumor in the site of the left kidney, which it was thought might be a pyonephrosis. Operation disclosed a brownish-black, soft, pliable mass, the size of a small orange, posterior, inferior, and lateral to the left kidney. The kidney was normal in size, color, and consistency, with no distention of the ureter. Fat-necrosis was found. The mass was removed and the cavity drained. The patient survived nearly ten days. The autopsy showed necrosis of the pancreas. Wirsung's duct patent. No stones. The gall-bladder ducts were empty and patent, the common duct dilated, and two mulberry stones smaller than cherries were found in the gall-bladder. The necrosis involved, besides the body and chief part of the head of the pancreas and the left perinephritic region, the left adrenal gland. No skin pigmentation.

That the tuberculous element in the adrenals, however frequently it is found, is not the sole and essential cause of the Addison complex is suggested by the experiments of Vecchi,[16] who injected tuberculous bacilli into the adrenal glands of rabbits. A tuberculosis of these glands was produced and there was extension of the process to the central nervous system, but no pigmentation either of the skin or mucous membranes was produced. He believes that these symptoms of Addison's disease are the result of two factors, adrenal insufficiency and an intoxication produced by the tuberculous process. But if the tuberculous process is, as we have shown, not an indispensable part of the disease, why should we not return to what was practically Addison's own theory, that any disease involving adrenal inadequacy may produce the symptoms, and that the part played by tuberculosis is simply that it happens to be the most frequent destructive lesion of the adrenal?

In 1885, Hadden[16] noticed the similarity of lesion in his case of Addison's complex from interstitial atrophy of the adrenal to the lesion existing in the thyroid in myxedema. Osler[17] pointed out more in detail the analogies between the loss of an internal secretion, as producing in the case of the thyroid myxedema, and in the case of the adrenals, Addison's complex. It is interesting in this connection to note that Rolleston in 1896 had suggested that in certain cases of adenomata or hyperplastic tumors of the adrenals the

symptoms might be due to altered structure and depraved secretion, just as Graves' disease depended upon similar processes in the enlarged thyroid. The far greater frequency of destructive and atrophic lesions of the adrenals in connection with symptoms of Addison's disease, however, makes the analogy of myxedema seem more reasonable than that of Graves' disease.

If this analogy prove true, should we not expect a therapeutic triumph similar to that over myxedema in those cases of Addison's disease where the adrenal inadequacy is not overshadowed by the strong toxic influence of extensive tuberculosis? Dubois,[18] taking the ground that the disease is a continuous auto-intoxication from the lack of an excretory action of the adrenals, says in confirmation of that view that the therapeutic use of capsular extracts by injection always produces toxic phenomena and hastens death. But of late we know that some definite observations have shown the opposite fact. Cases have been reported by Osler,[17] Shattuck,[19] Deeks,[20] Porpelow,[21] and others, showing marked improvement and in some cases cure of the disease, with disappearance of bronzing, under the administration of adrenal extract. There is certainly ground for encouragement in trying this remedy wherever advanced tuberculosis is not present.

Dr. M. Foster[22] points out that the cortex of the adrenals is derived from the masses of mesoblastic cells surrounding the great blood vessels, while the medulla is derived from and is a modification of the sympathetic ganglia. The former suggests important metabolic processes, some of which are connected with the history of pigments of the body at large. The latter suggests peculiar nervous connections. In some animals he adds that these two are wholly separate bodies. Probably the more important functions of the organ reside in the medulla, in which, for instance, Abel[23] finds that the blood-pressure-raising constituent is contained. The total extirpation of the adrenals is fatal.

Two views have been held as to the function of the adrenal glands—one expressed by Huisneau[24] that they attract to themselves certain toxic products originating from intestinal decomposition (*e. g.*, pyrocatechin) and from muscle action (*e. g.*, phosphoric and lactic acids), rendering them harmless and preparing them for excretion by the kidneys. The other, that there is a synthetic production of a substance essential to the maintenance by the sympathetic system of the nutrition and normal tone. The latter view is at present more favored by physiologists. But it is perhaps easiest to explain the symptoms of Addison's disease by assuming that both these functions are fulfilled by the adrenals. The failure of the first enplains the toxemia, the failure of the second the pigmentary and other nutritional changes.

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MEDICAL PROGRESS.

SURGERY.

Excision of the Joint Capsule in a Gouty Toe.—The suggestion is made by RIEDEL (*Deut. med. Woch.*, August 25, 1904), that in suitable cases relief may be secured by removal of the urates and the joint capsule from the affected toe. He reports two cases in which this was done. In the first an operation was undertaken for what was believed to a suppurative arthritis, but on opening the joint, the latter was found to be filled up with urates. These were removed and the thickened joint capsule excised. The patient was relieved of his symptoms and remained free. He died twelve years later from some other disease. The second patient was a woman of seventy years, was operated under similar condition and also was free from further symptoms, until her death six years later from aortic stenosis. Riedel admits that the application of this procedure is limited to patients in whom the gouty process is thus localized and where it is general, the usual treatment must be followed. He advises leaving the wound open and packing it with iodoform gauze.

The Production by Surgical Means of New Anastomotic Channels for the Blood of the Portal Vein.—On the basis of later observations, S. TALMA (*Berl. klin. Woch.*, August 22, 1904) states that a negative answer must be returned to the question, does the operative deviation of the blood in the portal vein favorably influence hepatic cirrhosis. Another query, as to whether the attachment of the omentum to the abdominal wall diminishes the danger of hemorrhage from the overdistended veins of the abdominal viscera, may be answered by stating that the dilatation itself cannot be improved, but the danger of rupture is certainly lessened by the lowered blood pressure. Talma considers that omentopexy is indicated, however, whenever hematomesis is present as the result of hepatic cirrhosis. A case of portal thrombosis is reported, in which an operation was done, but without favorable results. The author is inclined to abandon the method, if it were not for the report of a case by Umber, in which numerous natural adhesions were found, which seemed to compensate for the presence of an obstructed portal vein that had evidently been in this condition for a number of years.

The Pathogenesis of Chronic Gastric Ulcer.—A satisfactory explanation of the chronic progressive ulcer has not yet been attained, according to W. G. MACCALLUM (*Am. Med.*, September 10, 1904) although a large number of investigations have been made. The opinion of most of these is that gastric ulcers may be produced by anything which produces a necrosis of the mucosa of the stomach and thus subjects it to the action of the gastric juice. While certain cases lend themselves to this explanation, there are others whose inception is obscure. The persistence of some of these ulcers offers the greatest difficulty of explanation and none of the theories advanced is satisfactory. MacCallum thinks that perhaps the great majority of ulcers do heal, and are recognized only later by the scars they leave, so that possibly Talma is right in saying that all ulcers tend to heal, but that frequently they last a long time because new ulceration occurs in the same spot.

Extirpation of Mucous Polypoids.—A polypus at times escapes the snare because it is too mobile, too low, too large or because its form is such that the wire loop slips over it. The best reason for this failure is that the snare, an excellent instrument for section is a poor one for prehension. Realizing this J. TOUBERT (*Arch. Inter. de Lary. d'Otol. et de Rhin.*, July, August, 1904) places the loop of the serrenœud over a long thin Kocher's forceps. The forceps with the noose around is manipulated with the right hand, the other being free to manage the speculum. The polypus is seized with the forceps which are self retaining, with them the polypus is held firmly, the noose is slipped along the forceps over the tumor, which by this combined manipulation is rendered easy. After section the polypus comes away, still held by the forceps.

Cicatricial Occlusion of the Nares.—This form of occlusion of the nares following variola is rather a frequent lesion. C. COMPAIRED (*Arch. Inter. de Lary. d'Otol. et de Rhin.*, July, August, 1904) states that while it may not be of great gravity in itself, it merits the close attention of the physician, because of the respiratory troubles it may produce, and especially because of the disfigurement that often results. If the latter take place, a plastic operation should be resorted to, which will depend mainly for success upon the postoperative treatment. The wound must be kept aseptic, and subsequent retractions prevented by the introduction of aseptic gause drains which later may be replaced by a sterile rubber or aluminum tube.

Ethyl-Bromide Anesthesia for Removal of Adenoids.—LAPAS (*Arch. Inter. de Lary. d'Otol. et de Rhin.*, July, August, 1904) recommends this narcosis as a means for the successful removal of adenoids and tonsils. Although it has the inconveniences of an early awaking of the patient and a contraction of the jaws, which at times is overcome only with greatest difficulty. Cases of death from its use have been reported. This anesthetic has three periods of action on the nervous system: (1) The cerebrum is anesthetized, the patient losing consciousness; (2) paralysis of the spinal cord and abolishment of reflex movements; (3) the bulb is affected, the heart with the respiration ceases and death results. From a surgical point of view the narcosis may be compared to a period of cerebral anesthesia with persistence of reflex movements, a period of complete anesthesia with paralysis of movements, a period of cerebral anesthesia with a return of movements. The first period lasts only a few seconds, the third, according to the deepness of the narcosis lasts from one to several minutes. It is these last two periods that are employed for the operation. The contents of a 20 gm. tube of ethyl-chloride is poured in a cone which is held firmly over the mouth and nose to prevent the access of air. Anesthesia accomplished, the head is held by an assistant and a mouth gag inserted. If contraction of the jaws is present it is overcome by putting a narrow tongue depressor between the jaws in the space just behind the molar teeth. It is absolutely necessary to have the patient held still when the reflex movements are present; in the case of a child this is easily done by an assistant, but with an adult it is necessary to have an operating chair in which the patient is bound. Although reflex movements return, the operation should be proceeded with, as the patient as yet has no sensation. If administered carefully there is no danger, the great advantage of this anesthetic being that immediately after the operation the patient is able to walk home.

Foreign Bodies in the Larynx.—F. MASSEI (*Arch. Inter. de Lary. d'Otol. et de Rhin.*, July, August, 1904) recommends for the removal of foreign bodies from the larynx, an instrument similar in construction and form to a small urethral sound, but the curve is more nearly at right angles than that of the sound. The distal end is blunt and bent near its extremity like a crochet hook. One should have four of these with the hooks turned in different directions. With one of these the author has drawn up an impacted chicken rib that resisted all attempts with a König forceps, even though a good grip was obtained.

The Spontaneous Cure of Cancer.—It has been claimed by a number of observers that the giant cells met with in carcinoma of the skin were to be considered as part of a curative process. R. BORMANN (*Deut. med. Woch.*, August 25, 1904) carefully examined over 250 cases on this point and although his observations agree with those of other investigators he considers that a wrong interpretation has been placed on their findings. He admits that the giant cells may form around foreign bodies, but that they do not surround living cells, particularly those of a proliferating new growth. If the latter occurred, a spontaneous cure might be spoken of, but there is no evidence that it takes place. In rodent ulcers, which may exist in a quiescent state for prolonged periods and where a process of this kind might be expected, nothing resembling it was found. The writer believes, moreover, that these giant cells are found in greater number in the rapidly growing forms of tumors, than in the slowly developing types of carcinoma. He disclaims that there is any such thing as phagocytic action, in which the giant cells play the main role, similar to that associated with the disposition of dead material in other parts of the organism.

Acute Pancreatitis with Recovery after Laparotomy.—Two cases, with a disseminated fatty necrosis in the abdomen, which have remained cured for over a year after operation, are reported by WIESINGER (*Deut. med. Woch.*, August 25, 1904). The prodromal symptoms in both cases comprised digestive disturbances, followed by severe epigastric pain, vomiting, absence of stools and flatus, alternating with periods of profuse diarrhea. The diagnosis was not made until the laparotomy disclosed the fatty necrosis scattered throughout the abdominal cavity. The author considers that this affords the most conclusive symptom, and where it is present, the blood-stained serum in the abdomen should be

evacuated, the bursa omentalis drained, but the viscera should be disturbed as little as possible. The operation should be done without a general anesthetic, if possible. In one of the patients, laparotomy was done a year afterward for another condition, and the areas of necrosis were found to have been fully healed.

PHYSIOLOGY.

The Protective Value of Proteids on Trypsin.—Arguing from recent researches, H. M. VERNON (*Jour. of Physiol.*, August 22, 1904), concludes that most, if not all, ferments are to some extent protected from the destructive action of acids or alkalies or high temperature by the presence of proteids. The evidence on the whole seems to indicate that such protection is exerted mainly by the proteid combining with the acid or alkaloid present, and so preventing it from reacting upon the ferment; but it might also be held to argue that some combination or interaction takes place between ferment and proteid. The researches of the author show that the former supposition is the correct one, although in certain cases a combination of ferment and proteid does occur.

Metabolism in Fasting and Feeding.—In a series of experiments performed on rats, E. S. PEMBRAY and E. I. SPRIGGS (*Jour. of Physiol.*, August 22, 1904), find that during fasting the respiratory exchange quickly reaches a minimum, and then remains remarkably constant during the prolongation of the fast. The effect of food rich in carbohydrates upon the respiratory exchanges is well marked within an hour, and steadily increases during the next two or three hours. The increase in the output of carbon dioxide varied acording to the conditions from 14 to 97 per cent. of the minimal discharge during hunger; the increase in the absorption of oxygen was 9 to 35 per cent., but in three cases it fell below the minimal discharge during hunger. This decrease in the absorption of oxygen may be explained, as Zuntz and Lehman suggest, by the fact that carbohydrates yield more heat from their oxidation than do fat and proteid, when the consumption of oxygen is equal in the two cases, and thus the animal can satisfy its needs of energy by a smaller absorption of oxygen. On the other hand it might be due to diminished muscular exercise of the feeding. The increase in the discharge of CO_2 after a meal appears to be due to a general increase in the metabolic processes of the body, including the formation of fat, and not solely to the work of digestion. A fast preceding a meal serves as a marked stimulus to the assimilation of food.

The Spinal Respiratory Centers.—The researches of Rokitansky, Langendorff and Wertheimer, have revealed the presence of spinal respiratory oblongata. This fact is confirmed by A. Mosso (*Arch. Ital. de Biol.*, May 31, 1904). In experimenting on kittens the author found that on completely severing the cord just above the first cervical nerve, and by keeping the animal warm and by maintaining artificial respiration until the effects of the shock have passed off, at the end of forty minutes the cat takes six or seven respirations, each followed by four or five feebler ones. This form of restored breathing might be characterized as a periodic one, phases of repose alternating with phases of activity. The spinal respiratory centers are rapidly exhausted, and the breathing becomes shallower and shallower until it finally ceases. The renewal of artificial respiration restores spontaneous breathing which is more vigorous than before. The respiratory curve resembles that seen in asphyxia. It is probable that the respiratory cells in the spinal cord have the same function as those in the medulla oblongata, and react in the same way to asphyxia.

Carbon Dioxide in the Blood in Diabetic Coma.—An analysis of the quantity and presence of carbon dioxide in nervous blood and in alveolar air in cases of diabetes and diabetic coma, revealed to A. P. BEDDARD, M. S. PEMBREY and E. I. SPRIGGS (*Jour. Physiol.*, August 22, 1904), that it is probable that the respiratory center is stimulated by other substances than carbon dioxide, and that in coma the hyperpnea, which is marked by the depth of the inspiration and expiration, reduces the volume of carbon dioxide in the nervous blood, for it has already been shown that the pressure of the alveolar carbon dioxide fall to 2.2 per cent. of an atmosphere. Lehman showed that weak acids stimulated the respiratory center, and Geppert and Zuntz, from an examination of the gases in arterial and venous blood, came to the conclusion that the hyperpnea produced by muscular exercise was due to some products of metabolism and not to an increase of carbon dioxide or a decrease of oxygen in the blood. During the treatment of patients suffering from diabetic coma by the injections of solutions of sodium bicarbonate the typical deep ventilation of the chest disappears. The author's observations do not support the view that the low proportion of carbon dioxide in the venous blood in diabetic coma is directly dependent on the reduced alkalinity and a reduced carrying power of the blood for that gas. They suggest that the hyperpnea is a cause and not an effect of the reduction of the carbon dioxide in the blood.

The Elasticity of Animal Tissues.—What is known as Hooke's law, namely, "that the power of any spring is in the same proportion with the tension therof," is found by J. B. HAYCRAFT (*Jour. of Physiol.*, August 22, 1904), to be applicable to all the simple tissues of the body when they are stretched within physiological limits. The relaxing appears to vary and Hooke's law is not always observed. The different tissues vary in the time that they take to recover their former length.

The Relation of Adrenalin to Muscular Fatigue.—The highly practical and novel researches on this subject by S. DESSY and V. GRANDIS (*Arch. Ital. de Biol.*, May 31, 1904), were inspired by the following experiments and observations of other authors. In 1891-92 Abelous, Langlois and Albanèse, observed that animals deprived of the suprarenal capsules are incapable of performing prolonged muscular actions and that they rapidly succumb to a short exertion. These results the above experimenters attribute to the fact that the internal secretion of the suprarenals neutralizes the toxic products of the muscular contraction. This observation served to explain the clinical experience that individuals affected with Addison's disease present a marked degree of adynamia. Battelli found that during fatigue the quantity of adrenalin in the suprarenal capsules diminishes. and that during the hours consecutive to an intense degree of work, the suprarenal capsules contain an amount of adrenalin greater than the normal. This observer based these facts upon the hypothesis that adrenalin passes into the circulation in order to neutralize the depression produced by muscular work. He explained the later increase in the amount of adrenalin by the supposition that the organs, particularly the muscles and nerves. produce a proto-adrenalin. which the suprarenal capsules transform into adrenalin. The authors of the present paper, considering this explanation too complicated, sought more direct reasons for this phenomena. They studied the effect of adrenalin upon a muscle which had passed into fatigue. They found that

when, after a long series of contractions, the muscle has lost its power to contract, if 2 c.c. of an aqueous solution of suprarenal capsule be injected into the dorsal lymphatic sac (the solution being prepared by dissolving 5 gr. of dried suprarenals in 100 c.c. of distilled water), after from two to eight minutes, the muscle begins again to contract, and continues to do so for a period longer than that seen at the beginning of the experiment. On examining the graphic curve, it is found that the adrenalin, while neutralizing the effect of fatigue, does not do so entirely, for the renewed contractions are not as strong as those seen after a period of normal repose. This deficiency of strength is probably to be attributed to certain changes produced in the muscular fibers apart from the action of the toxic products of the muscular contratcion. The authors found that animals which have been for a long time in the condition of fasting, possess a greater susceptibility to the fatigue-neutralizing action of adrenalin. One might say that the suprarenal capsules, of all the organs, are the ones which are the most profoundly affected by fasting. Probably to the absence of the function of the suprarenals may be attributed the muscular debility characteristic of an insufficient diet. The researches of the authors show that a fatigued muscle, in spite of the large amount of work accomplished, has not in reality exhausted all its energy, since, without resting an instant, it can begin again to contract, by receiving a small quantity of adrenalin. It would appear that the latter drug neutralizes the action of the toxic substances produced during the muscular contraction. But the suprarenal capsules cannot counteract entirely the effect of muscular fatigue. One is lead to the conclusion that the muscular substances is affected by the contraction, so that, in spite of the protection afforded by the suprarenal capsules, the time comes when the muscle can no longer contract. It is therefore necessary to restrict the term "muscular fatigue" to the disability which cannot be overcome by adrenalin. From the study of the action of adrenalin on unstriated muscular fibers, the authors draw the general conclusion that this substance acts upon the contractility of protoplasm. The hemostatic power of adrenalin probably depends upon the fact that the latter, in neutralizing the products of contraction, permits the vasoconstrictor nerves to develop their entire activity and to keep the small vessels contracted for a long time. In the same manner may be explained the rapid and brief increase in blood pressure following the injection of adrenalin, which increase is dependent upon the action of this substance upon the myocardium and upon the muscular tunic of the arteries. The action of adrenalin is a transient one, since this secretion is rapidly oxidized by the arterial blood.

Intra-ocular Circulation and Intra-ocular Pressure. The pathology of glaucoma will probably be illuminated by new researches in the various factors that influence the pressure inside the eyeball. An interesting investigation into this domain has been conducted by E. E. HENDERSON and E. H. STARLING (*Jour. of Physiol.*, August 22, 1904). They find that the intra-ocular pressure is a function of the pressure in the ocular blood vessels, and varies directly as this latter. The intra-ocular pressure rises and falls with the general arterial blood pressure, and is not appreciably affected by a certain degree of rise in the pressure in the great veins. Stimulation of the sympathetic (head end) causes a preliminary rise in intra-ocular pressure, due to contraction of the orbital unstriated muscle, followed by a slow fall of pressure occasioned by contraction of the intra-ocular blood-vessels. Stimulation of the peripheral end of the divided fifth nerve root causes a rise of pressure due to contraction of the orbital unstriated muscle. This effect is absent if the fibers coming to the Gasserian ganglion from the sympathetic nerve degenerated in consequence of preliminary extirpation of the superior cervical ganglion. There is no evidence of vasodilator fibers to the eyeball either in the fifth or cervical sympathetic nerves. Previous statements to the reverse effect are based on imperfect experimentation. The effects of adrenalin and nicotin on the eye vary according as the local or general effect in the blood vessels predominated.

The Union of Different Kinds of Nerve Fibers.—Of eminent practical importance from the viewpoint of recent surgical progress in the anastomosis of nerve fibers, are the results of the experiments of J. N. LANGLEY and H. K. ANDERSON (*Jour. of Physiol.*, August 22, 1904), upon the limitations to the possibility of uniting different kinds of nerve fibers. The experiments were made on cats and rabbits. When the central ends of two limb nerves are joined, no functional union takes place between them; impulses set up in one nerve cannot pass across to the other. When the central end of a limb nerve has an opportunity of joining with two peripheral nerves, stimulation of one peripheral nerve, after complete severance of the conjoined nerves from the central nervous system, may cause contraction of the muscles innervated by the other. The authors consider this to be an axon reflex, set up in fibers from the central end, one branch of which has joined one peripheral nerve and the other branch joined the other peripheral nerve. When one of the peripheral nerves consists entirely of afferent fibers an axon reflex may still be produced by stimulating it. Since efferent nerves do not, so far as is known, unite with afferent fibers, the axon reflex obtained supports the view that regeneration takes place by a down growth of axis cylinders. The crural nerve can make functional union with the sciatic and can be artificially lengthened. This is in harmony with Bethe's observation that the sciatic can be elongated by joining it with the sciatic of the opposite side. The authors do not find that when the internal saphenous nerve is joined to the sciatic nerve there is produced a motor effect. The phrenic nerve when united with the cervical sympathetic, can cause the usual effects produced by stimulating the latter nerve. The authors confirm Mislavsti's result that the cervical sympathetic can unite with the recurrent laryngeal nerve and cause movement of the vocal cords. Also after union has taken place, section of the cervical sympathetic causes degeneration of the medullated fibers in the recurrent laryngeal, except for a few which arise from the superior laryngeal nerve. The cervical sympathetic can unite with the phrenic nerve and cause contraction of the diaphragm. It can also unite with the spinal accessory and cause contraction of the sternomastoid muscle. They do not find that either (*a*) the afferent fibers proceeding centrally from the ganglon of the trunk of the vagus, or (*b*) the afferent fibers proceeding peripherally in the great auricular nerve, or (*c*) cutaneous afferent fibers can unite with the peripheral end of the cervical sympathetic in such a way as to transmit nervous impulses to it or to the superior cervical ganglion. Nor do they find that the cervical sympathetic after excision of the superior cervical ganglion—can make functional connection with the fibers leaving the anterior end of the superior cervical ganglion. Preganglionic fibers cannot make functional connection with postganglionic fibers. They do not find that the postganglionic fibers leaving the anterior end of the superior cervical ganglion can make connection with the hypoglossal fibers supplying the tongue muscles, although they do this with the vasomotor

fibers of the hypoglossal. The following general conclusions are drawn: The central end of an efferent fiber can make functional connection with the peripheral end of any other efferent fiber of the same class, whatever be the normal actions produced by the two nerve fibers. There are three classes of nerve fibers as regards the possibility of their union: *A*, Efferent fibers proceeding from the spinal cord, *B*, Postganglionic nerve fibers (the efferent fibers given off by the peripheral ganglia), and *C*, Afferent nerve fibers. Functional union is not possible between fibers of Class *A* and Class *B*. With regard to the union of afferent nerves with efferent nerves and vice versa, the term functional union is inappropriate. The authors confirm the experiments of Schwann and Schiff, which show that in the nerves of the limb afferent fibers when joined to efferent fibers, do not acquire any motor action. The possibility is not excluded that afferent fibers may grow down the course of the efferent fibers, and form afferent nerve endings, which from character or position, are incapable of transmitting impulses to muscle, gland, or motor nerve-cells. The influence which impels the cut ends of various nerve fibers to grow to one another, appears to be of a chemioactic nature, which influence has numerous gradations. The nerve fibers of the three classes mentioned above are incapable of coalescing with one another. Whether the regeneration, which takes place when fibers of the same class are united is due to coalescence or to down growth, the authors regard as an open question, notwithstanding the interesting researches of Bethe.

Reaction of Thymus to Assimilation of Calcium Salts.—Like other authors, the experiments of F. SINNHUBER (*Zeitsch. f. klin. Med.*, Vol. 54, Nos. 1 and 2), lead him to believe that the thymus possesses no functions of value to postembryonal life. Its extirpation does not influence the absorption and assimilation of lime salts, and it stands in no relation with rachitis. The atrophy or hypertrophy of the thymus seen in this disease, is simply a manifestation of the same constitutional disturbance which causes the diminished amount ot calcium in the bones. The ingestion of thymus glands has no influence upon the excretion of lime, but slightly increases the amount of nitrogen voided. Large doses of thyroidin, on the other hand, considerably increases the amount of calcium and nitrogen in the urine.

THERAPEUTICS.

Serum Treatment of Acute and Chronic Articular Rheumatism.—D. MENZER (*Münch. med. Woch.*, August 16, 1904), states that better results in the treatment of acute and chronic articular rheumatism have been obtained from the use of antistreptococcus serum than from any other medicine. Chronic cases, if not cured, are materially improved and in acute cases an endocarditis will heal more readily. As proof of the latter fact a case is cited which presented well-marked increase in cardiac dulness with presystolic and systolic murmurs at the apex during an acute attack, but two years after treatment there were no longer any definite signs of endocarditis. Since the serum may render acute chronic inflammatory processes, it should be used with caution in pericarditis, or marked pleurisy, or advanced mitral stenosis. In acute cases single doses of 5 c.c. should be employed, while if chronic, several periods of treatment are necessary. The other measures employed for rheumatism are also in place but salicylates need not be given.

A New Digitalis Preparation.—The great drawback in giving digitalis, lies in the fact that the drug is of varying strength and different preparations may thus give rise to a varying therapeutic effect. Though all the active principles of the drug are contained in digitoxin, the main glycoside of the leaves, this has not come into general favor, since insoluble and irritating and entirely unfit for hypodermic use on account of the necrosis it is liable to set up. By means of a very complicated process, M. CLOETTA, (*Münch. med. Woch.*, August 16, 1904), has finally succeeded in isolating an amorphous digitoxin which is much more soluble in water than the crystalline substance. It has been placed upon the market under the name digalin, in solution, of such strength that each cubic centimeter corresponds to 0.3 milligram, the average dose. After injecting, it is advisable to employ gentle massage and to cover the spot with a wet dressing. The physiological action is exactly the same as that of digitalis.

Active Principle of Male Fern.—The chief disadvantages of male fern as a therapeutic agent are its varying strength, disagreeable taste and irritating properties manifesting themselves in vomiting and intoxication. All the different principles occurring in male fern have been carefully tested by A. JAQUET. (*Therap. Monatshefte*, August, 1904). It seems that all the active properties are contained in the amorphous acid filmaron, which constitutes about five per cent. of the extract. Filicic acid and albaspidin are also anthelmintic but to a less extent and are also less abundant in the extract. The average dose of filmaron is 0.7 gmes. and patients very rarely experience other after-effects besides slight nausea or transient abdominal cramps. In efficacy it seems to be almost equal to the fresh extract from the rhizome.

Properties of Stypticin.—The hemostatic properties of stypticin, the hydrochlorate of cotarnin were not discovered by accident, but were predicted on account of the close relationship of this drug to hydrastinin. M. FREUND, (*Therap. Monatshefte*, August, 1904), has seen excellent results in climateric hemorrhage, hemorrhage of pregnancy fibroids and subinvolution, in reflex hemorrhage due to disease of the adnexa or the parametrium and in the congestive bleeding of young girls without pathological lesion. Recently a new preparation of stypticin has been placed upon the market under the name of styptol. It is the phthalate of cotarnin and possesses no advantages over stypticin since it is changed into the latter in the stomach. The usual dose of stypticin is 0.05 gm. six to ten times a day, but much more may be given, since it is in every way harmless.

Treatment of Anemia.—Arguing from the standpoint that chlorosis is an intoxication, C. S. ENGEL, (*Zeitsch. f. klin. Med.*, Vol. 54, Nos. 1 and 2), injected small quantities of the blood of a severely anemic girl into a rabbit, in the hope of bringing about the formation of an antibody. After a certain time, some serum was withdrawn from the animal, heated for half an hour to 58° C. and one cubic centimeter injected into the patient. The reaction following was very severe, but subsequent doses were better tolerated, so that only slight headache was complained after the eighth and last dose. Though the patient had continually lost ground with arsenic and iron medication, she picked up wonderfully during the two months the injections were given, and when seen, a year later, the blood contained 90 per cent. hemoglobin and 4.8 million red cells.

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PRESENT POSITION OF GRAVES' DISEASE.

WHEN about the end of the first quarter of the nineteenth century Dr. Robert Graves, of Dublin, described two cases of nervous disease suffering from special symptoms including rapid heart with prominence of the eyes and a goiter in the neck there was no thought that he had described an important nervous affection. Not for several years later were further cases of the same disease detected and described on the Continent. Even after it had come to be generally recognized that this was a special symptom complex, deserving a separate name in nosology, it was considered to be a rare condition. After three-quarters of a century there is a growing conviction that the disease is much more frequent than has been thought, that it may occur with any two of the classical triad of symptoms absent and that milder forms of the disease may be comparatively so latent as to require special care for their recognition.

While it has more than once been suggested that Graves' disease is not due to a disturbance of the thyroid gland but to some other ductless glands, there has always been a recurrence to the idea that the most probable basis of the affection is a superabundance of thyroid secretion in the system. Last year we called attention to Dr. McCallum's experiments of animals deprived of the parathyroids which seemed to show that an affection resembling Graves' disease developed in the deparathyroidized animals. We know, however, from experiences here in New York and elsewhere that the therapeutic suggestion made as a consequence of these observations to prescribe extract of parathyroids or the dried substance of these glands from animals for sufferers from Graves' disease, has not proved successful in practice. On the other hand, it is well known that the use of thyroid extract or desiccated thyroids always causes an exacerbation of the symptoms of Graves' disease and that therefore the possible etiology of the affection is the hypersecretion from this gland.

That there should be a functional disturbance of the thyroid, temporary in character leading to symptoms of Graves' disease, not necessarily severe, yet more or less typical and representing deviations from the normal health in nervous individuals, would not be surprising. The exactly opposite condition of myxedema, in which there is apparently a deficiency of thyroid secretion, occurs typically in those in whom the gland is absent, but milder forms of the disease and certain analogous manifestations have been known to occur without necessarily being accompanied by lasting changes in the soft parts or any serious constitutional disturbance. It is generally recognized now that functional disturbance of the thyroid with a tendency toward deficiency of secretion may produce a number of symptoms in children which are favorably affected by the administration of small amounts of thyroid extract or desiccated thyroid substance. During the period just before and after puberty the tendency exhibited by certain young people to take on an abnormal amount of flesh has been found to be associated with some disturbance of the thyroid secretion, which can be modified with good effect by the administration of thyroid material.

It is not surprising that milder cases of Graves' disease should occur with symptoms so latent or concealed under the mask of neurasthenia, or nervous weakness of some kind, that their real origin is not recognized. At times such cases may occur without noticeable goiter and a series of such cases have recently been published by Dr. William H. Thompson. Occasionally these cases without goiter, may be quite severe in their other symptoms. The theory of Graves' disease, which has met with most acceptance, is that some poi-

sonous material within the body is destroyed by means of the thyroid secretion. The presence of this toxic material in larger quantities than normal so irritates the gland that more thyroid secretion is poured out than is necessary with the consequent production of the symptoms of Graves' disease. It is probable that in some cases the thyroid fails to enlarge, even though it does respond to the irritation and that its increased secretion fails to be neutralized in the way usually provided for it by substances ordinarily absorbed from the digestive tract.

The most successful treatment of Graves' disease continues to be the careful management of the alimentary tract. It is a rule almost without exception that in Graves' disease there are annoying symptoms of gastric and intestinal indigestion. Alternating constipation and diarrhea is the characteristic history. Whenever the condition of the digestive tract is improved the symptoms of the affection almost invariably grow better and even symptomatic cures may occur. There always remains a tendency to relapse, showing that there probably was originally some pathological condition, either in the thyroid glands, or in the absorbent apparatus of the intestines, but the improvement that can thus be obtained is often very remarkable. It would seem that the modern clinician instead of grouping a number of puzzling cases with nervous symptoms and a marked tendency to rapid heart, under such vague terms as neurasthenia or nervous tachycardia, should bear in the mind the possibility of Graves' disease being present in these cases and should direct his treatment and announce his prognosis of the ailments of such patients with these considerations in mind.

ULCER OF THE DUODENUM.

WHILE it was generally conceded that ulcer of the stomach was by no means infrequent until very recent years, it has been the custom to regard ulcer of the duodenum among the rarities of clinical experience. It is not only much rarer than ulcer of the stomach, but by a curious anomaly it is said that while ulcer of the stomach was much more frequent in women, ulcer of the duodenum occurred much oftener in men.

It appears, however, that the better part of our supposed knowledge of ulcer of the duodenum has been founded on lack of due information. Unless special symptoms called for it the duodenum was not often opened at autopsy and recent studies seem to show that many an ulcer in this portion of the tract has thus escaped discovery.

It is generally conceded that ulcer of the stomach may not infrequently run its course absolutely without any symptom, and many perforations of the stomach wall from ulcer have occurred without a single salient feature of the history that would indicate the presence of a gastric ulcer. The same has probably been even more common with ulcers of the duodenum. At the last meeting of the American Surgical Association Dr. W. J. Mayo and Dr. Christopher Graham, of Rochester, Minn., presented a clinical study of 41 cases of ulcer of the duodenum on which they had performed operations. The very fact that the service of one should furnish so many cases to report shows that this lesion is by no means as infrequent as has been thought. In more than one-fourth the cases there was coincident ulcer of the stomach. Indeed so commonly is the duodenal ulcer associated with severe gastric ulcer that Dr. Mayo advises that the incision for operation upon a case of gastric ulcer be planned with the idea of allowing careful investigation of the duodenal region. For this purpose he suggests that the incision should always be made well to the right of the median line.

The frequency of ulcer of the duodenum may demand more careful investigation as to another long-accepted idea with regard to its occurrence in connection with extensive burns. It is a text-book tradition that in these cases severe duodenal ulcers are likely to be found if the patient has survived the accident for some time. This relation is so well known that no one now makes an autopsy on a subject that has died from a burn without careful examination of the duodenum. The consequent investigation has led to the confirmation of the suspicion that duodenal ulcers have not been found in every case, but only in a notable proportion of the cases. Whether the finding of duodenal ulcer in these cases may not be only a coincidence due to the unsuspected frequency of a lesion which is not necessarily connected with the burn, remains to be determined; but there are many medical traditions that have been accepted on less trustworthy evidence than this.

In the meantime duodenal ulcer, like many other diseases formerly considered so rare as to be medical curiosities, must now take its place among the possibilities always to be considered when there are obscure abdominal symptoms

Affections of the biliary tract are receiving so much attention that discomfort and tenderness in this abdominal quadrant is almost sure to be taken for some biliary complication and the most careful differentiation will be needed. The adhesive inflammation around a duodenal ulcer is likely to involve the bile passages, so that the primary lesion may be impossible of determination. There is no doubt, however, that some of the supposed cases of malignant disease in this region have been chronic inflammatory and cicatricial conditions arising from old but unsuspected duodenal ulcers. Thus another reason for hope in what used to be considered fatal cases is now held out.

ECHOES AND NEWS.

NEW YORK.

Cornell University Medical College.—Dr. Frederick Whiting has been appointed Professor of Otology in place of Dr. Gorham Bacon, resigned. Dr. Adolf Meyer has been appointed Professor of Psychiatry in place of Dr. Allen McLane Hamilton, resigned. The students registered for the coming first year class, to begin work on September 28, are largely in excess of the numbers of any previous class at this date, and it is exceedingly gratifying to note that the campaign carried on so vigorously in the medical press for better preliminary education is beginning to bear fruit, for 78 per cent. of those applying present evidence of having had chemistry and physics.

Pharmacists Protest.—Pharmacists all over the city are preparing earnest protest against the recent amendment to the Sanitary Code, prohibiting the sale of carbolic acid at retail except in the form of four or five per cent. solution. The Kings County Pharmaceutical Association has already appointed a committee to arrange with other pharmacists' organizations in the greater city for common appeal. The complaint of the druggists is that the prohibition of the sale of the acid, while it will not accomplish its purpose, that of making suicide more difficult, will inflict a great hardship on the public, who use carbolic acid more than any other agent for disinfectant purposes. At the same time they assert that an intending suicide can go to a wholesale drug house and buy the acid in the original package without question, and a child can do this as easily as an adult. In the notice of the new carbolic acid regulation it is stated that, while the Department of Health does not desire to pursue the drug trade particularly, if carbolic bottles bearing the name of a drug firm are found by the Coroner's office by the side of suicides, the department will take action against such druggists through the District Attorney's office.

Columbia's Opening Exercises.—The exercises to mark the opening of the one hundred and fifty-first academic year of Columbia University, will be held in the University Gymnasium on Wednesday, September 28 at 3 P.M., and will be open to the public. The address will be delivered by Professor Robert Simpson Woodward, Dean of the Faculty of Pure Science, whose subject is to be "Academic Ideals." The exercises this year will be marked by the presence of the Archbishop of Canterbury, one of whose predecessors in office was the first *ex-officio* trustee named in the original charter of King's College. Upon the conclusion of the exercises in the Gymnasium, the Archbishop of Canterbury will formally dedicate to religious uses the site upon which the new University Chapel is to be built. The Archbishop will be escorted to his place upon the platform in the Gymnasium by an academic procession consisting of the officers of instruction and of the members of the boards of trustees of the several corporations included in Columbia University. Seats will be reserved upon the floor of the Gymnasium for the students, grouped according to schools, and also for members of the families of the trustees and officers of instruction.

College of Physicians and Surgeons.—The opening exercises of the academic year 1904-5 will be held in the Lower Lecture Room on Thursday, September 29 1904, at 3 P.M. After a brief address of welcome by the President of the University an address will be delivered by John G. Curtis, M.D., Acting Dean and Professor of Physiology, upon "Our Medical Training in the Light of Ancient Error."

PHILADELPHIA.

Typhoid Again Increases.—During the past week 134 cases of typhoid fever were reported, an increase of 34 over the preceding week. The effect of filtered and mixed water in West Philadelphia is being carefully watched.

Trolley Cars to be Improved.—The Philadelphia Rapid Transit Company is at last beginning to remove the plush and carpet-covered seats from their cars and replace them by rattan. This was the subject of a great deal of comment during the past year by individuals and societies, particularly those for the prevention of tuberculosis. Reforms will come if the people persist in demanding them.

Hospital Patients Alarmed in Queer Way.—During the severe storm of last week a limb blew against the steam whistle of the Pennsylvania Hospital engine house and the shrill whistle, which is used only in emergency cases, was kept blowing for ten minutes while the storm was at its height. The patients were all alarmed and a negro who had been stabbed some days before died during the excitement.

No Law Against Selling Babies.—Though the papers of the city have recently exposed several places where infants are bought and sold, officials say there is at present no law by which those engaged in the business can be prosecuted. The only hold is in arresting the people for cruelty and this is seldom possible as the infants are cared for perhaps better than at home. Instances are known where infants are loaned over night for $3 to $5.

Opening of Medical Colleges.—The Woman's Medical College of Pennsylvania opened on Wednesday, September 21. The exercise included inspection of the new pavilion hospital and dispensary. In the Freshman Class are two students from India. The Jefferson College opens September 26, the Medico-Chirurgical September 28, and the University of Pennsylvania on September 30. The Philadelphia Polyclinic opens on October 3.

CHICAGO.

First Aid to the Injured.—It is said that the casualty list incident to the rush of modern industrial life has grown so appalling in the last year that an organized effort is being made in Chicago to instruct individuals in the best methods of giving first aid to the injured. The Chicago First Aid Society, consisting of prominent doctors and laymen, which has been formed for that purpose, is pushing its work. The course of public instruction will consist of a series of lectures which will include elementary lessons in anatomy and physiology. In-

struction will be given in bandaging and how to treat shocks of electricity. Methods of treating broken bones, sprains and dislocations will also be taught. The medical board, which will award certificates and badges to graduating members, is made up of Drs. Nicholas Senn, Charles Adams, R. N. Foster, Arnold C. Klebs, Henry B. Favill, James B. Herrick, N. S. Davis, S. C. Stanton, John Ridlon, John B. Murphy, Wm. E. Quine, and Geo. Webster. No charge is to be made for the instruction.

Insanity on the Increase.—According to interviews with several physicians, in the Chicago *Evening Post* of recent date, this disease is increasing at an alarming rate. Dr. Warren H. Hunter, of the Chicago Detention Hospital, said: "It is a mistake to suppose that many patients become deranged from the strenuous life of the city and overwork—it is not the work, but the stimulants used by man to push him on, against the warning of nature, like whipping an exhausted horse into action. If the overworked man would not keep up on drugs nature would give him the needed rest in the form of an illness, but under the whip lash of stimulants, when he does collapse, having no reserve resistance, he often becomes deranged."

Benefit Concert for Samaritan Hospital.—On the evening of September 16, a benefit concert for the Samaritan Hospital was given at the Coliseum. The Coliseum Company donated the use of its building, and Brook and his band furnished one of the best programs of the season. It is the only opportunity this year that the public has had to help this hospital. Though a charity, the Samaritan Hospital is doing good work. In the absence of a down-town emergency hospital, practically all of the victims of accidents which happen in the down-town district are taken there. The police have been accustomed to take unknown victims of accidents to the Cook County Hospital, but many lives have been saved by hurrying to the near-by Samaritan, where immediate medical attention may be had. At the time of the Iroquois disaster, the Samaritan cared for twice as many of the injured as any other hospital. No patient has ever been refused at the hospital.

Sir Felix Semon Entertained.—This distinguished physician was given a dinner by the Chicago Laryngological and Climatological Society at the Chicago Club, September 15.

Appointment of Dr. Wald.—Dr. O. E. Wald has received the appointment of Chief Surgeon of the Bethesda Hospital.

Chicago Day at the Louisiana Purchase Exposition.—Drs. Arthur D. Bevan and James Chvatal have been nominated on the committee to represent Chicago on October 8.

CANADA.

Canadian Medical Association.—The thirty-seventh annual meeting of the Canadian Medical Association was held in Vancouver, B. C., on August 23, 24, 25 and 26, under the Presidency of Dr. Simon J. Tunstall, of that city, the General Secretary being Dr. George Elliott, of Toronto. It was the first time that the Association had held a meeting in the Pacific province, and every expectation of a good and a largely attended meeting was fulfilled. The following guests were introduced to the meeting at the opening session: Mr. Mayo Robson, of London, England; Prof. E. C. Dudley, of Chicago; Prof. W. Japp Sinclair, of the Victoria University, of Manchester; Dr. McGillivray, of Edinburgh, Scotland; Dr. C. H. Mayo, of Rochester, Minn.; Dr. Oviatt, of Oshkosh, and Dr. Kenneth McKenzie, of Portland, Oregon. Mayor McGuigan, of Vancouver, who is a graduate in medicine of McGill University, delivered an address of welcome on behalf of the citizens of Vancouver, and he was followed by Dr. J. C. Davie, of Victoria, B. C., vice-president of the British Columbia Medical Council, who delivered the address of welcome for the profession of British Columbia. Dr. R. E. McKechnie, of Vancouver, proposed a resolution favoring the establishment by the provincial authorities of each of the provinces of Canada, of sanitaria for the treatment of cases of tuberculosis, which resolution was carried unanimously. The General Secretary, Dr. George Elliott, of Toronto, submitted his annual report. He urged that the Association be reorganized with branches throughout the Dominion. Dr. C. J. Fagan, of Victoria, B. C., secretary of the provincial Board of Health of British Columbia, read a paper on Patent Medicines, which brought out a keen discussion and resulted in the formation of a special committee to draft a resolution on the subject. This committee subsequently reported in favor of memorializing the Federal Government with regard to the formulæ being printed on all patent medicines offered for sale in open market. When the afternoon session was called to order, President Tunstall read the following telegram from Dr. Wolfred Nelson, of New York, which elicited much applause: "Thanks for kind invitation. I greatly regret cannot attend meeting. The press here, medical and lay, refers triumphantly to Osler's appointment as Regius Professor of Medicine at Oxford. King Edward approved it. Osler has accepted for next year. God bless dear old Canada, McGill and Osler." Dr. R. E. McKechnie, of Vancouver, then delivered the Address in Medicine. Mr. Mansfield, Fleet Surgeon on H.M.S. Grafton, was down for the exhibition of a new color-test apparatus, which in his absence was explained by Dr. Glen Campbell, of Vancouver. Dr. Kenneth McKenzie, Portland, Oregon, then read a practical and interesting paper on Movable Kidney, and was followed by Dr. Robert H. Craig, of Montreal, who reported several interesting and rare cases of a nasal nature. In the evening at the Hotel Vancouver, a conversazione was given by the local members of the Association, which proved a brilliant affair. At the morning session of the second day, Mr. Mayo Robson delivered the Address in Surgery, accompanied by a lantern demonstration, on the pancreas and the diseases of that organ. Of the many good papers and demonstrations of the meeting, this was undoubtedly the best, attracted a full representation of the members present, and was listened to with rapt attention throughout. At the conclusion a cordial vote of thanks was tendered Mr. Robson, moved by Dr. F. J. Shepherd, of Montreal. Following this was a paper read by Dr. Shepherd on Hernia of the Bladder complicating inguinal hernia, which was discussed by Dr. A. A. Macdonald, of Toronto, Dr. H. Meek, of London, Ontario, Dr. Secord, of Brantford, and Dr. Eagleson, of Seattle. Dr. S. R. Jenkins, of Charlottetown, P. E. I., then reported a Case of Hyperthrophy of the Breasts. At the afternoon session, Dr. J. W. Sterling, of Montreal, contributed a paper on Diseases of the Eye, and was followed by Dr. Cruickshank, of Windsor, Ont., with a paper on Therapeutic Hints from Bacteriology. A reception was held in the afternoon by the ladies of Vancouver at Pender Hall, and in the evening the President delivered the annual presidential address, dealing mostly with questions pertaining to the medical politics of the Dominion of Canada. Following the presidential address, Dr. E. C. Dudley gave a very able address in Gynecology, illustrated with lantern slides, which proved one of the features of the meeting and was very much appreciated by all present. Following Dr. Dudley's address, the plans of the fine new hospital which Vancouver is erecting were projected on the

canvas, which soon made it apparent that Vancouver promises to have the finest hospital in the Dominion. At the morning session of the third day Dr. C. H. Mayo, of Rochester, Minn., read an able paper on Tuberculous Peritonitis. He was followed by Dr. Henry Howitt, of Guelph, Ont., who, as usual, had something new to report. This time his subject was: Meckel's Diverticulum, with a Report of Cases. Dr. C. W. Wilson, of Montreal, then read a paper on The Results (after one year) of the Lorenz Reposition of Congenital Dislocation of the Hip. This was illustrated by a number of radiographs. Dr. E. R. Secord, of Brantford, Ont., contributed a paper on Operative Treatment of Spina Bifida. On the afternoon of the third day the visiting delegates were taken to the salmon canneries at New Westminster and Steveston on the Frazer River, the annual banquet being held in the evening at the Hotel Vancouver. A pleasing feature of the meeting was the very large delegation from the Maritime Provinces. The local members who formerly claimed their homes in the Provinces, down by the Atlantic, took advantage of the presence of so many of their former confrères in Vancouver, and tendered them a special address of welcome. The morning session of the fourth day, as usual, was devoted to the general business of the Association. The first item on the program was the reception of the report of the Nominating Committee. This was presented by Dr. F. J. Shepherd, of Montreal, the chairman, and on being read was adopted entire. It was as follows: Place of Meeting in 1905, Halifax, Nova Scotia. President, Dr. John Stewart, Halifax. Vice-Presidents: Prince Edward Islands, Dr. McLaren, Montague Bridge; Nova Scotia, J. B. Black, Windsor; New Brunswick, A. B. Atherton, Fredericton; Quebec, Jos. E. Dube, Montreal; Ontario, H. Meek, London; Manitoba, W. S. England, Winnipeg; North West Territories, H. C. Wilson, Edmonton; British Columbia, R. E. Walker, New Westminster. Local Secretaries: Prince Edward Islands, H. D. Johnson, Charlottetown; Nova Scotia, G. C. Jones, Halifax; New Brunswick, T. D. Walker, St. John; Quebec, J. D. Cameron, Montreal; Ontario, D. Stuart, Palmerston; Manitoba, Dr. Popham, Winnipeg; North West Territories, Dr. Hewittson, Pincher Creek; British Columbia, A. S. Monro, Vancouver. General Secretary, George Elliott, Toronto. Treasurer, H. B. Small, Ottawa. Executive Council, Dr. G. M. Campbell, Halifax; Dr. Jas. Ross, Halifax, Dr. C. D. Murray, Halifax.

The usual votes of thanks were passed and after the meeting adjourned, the Canadian Medical Protective Association held its annual meeting. The President, Dr. R. W. Powell, of Ottawa, took the chair, and read the annual report. This organization now has some three hundred members. A satisfactory report was made, and some changes were also made in the constitution. The office of treasurer was abolished and the secretary was empowered to act as treasurer and secretary. The British Columbia Medical Association also held a business meeting and elected Dr. W. D. Brydeon-Jack as President for the ensuing year and the place of meeting in 1905, Vancouver. It is generally understood that the British Medical Association will meet in Toronto in 1906, and that there will be a conjoint meeting of that and the Canadian Medical Association. Altogether the meeting at Vancouver was a pronounced success in every particular. It was the third largest meeting in the thirty-seven years' history of the Canadian Medical Association, being only surpassed by the meeting in Montreal in 1902, and the meeting which was held in London, Ontario, last year.

GENERAL.

Berlin School Children Examined.—This year, for the first time, all the children in the schools of Berlin were examined as to their health. There were fifteen thousand children and thirty-six examiners. The results were astounding. Ten per cent. of the children were found insufficiently developed in body or mind, and had to be excluded for half a year or longer; sixteen per cent. were not strong enough to attend school, owing to the debilitating effect of scarlet fever and other diseases; fifteen per cent. suffered from anemia; five per cent. had tuberculous trouble.

Compulsory Vaccination at Colon.—In order to prevent the introduction of smallpox an ordinance regarding compulsory vaccination has been passed and promulgated by the chief sanitary officer. The isthmus has been remarkably free from this disease since the epidemic which prevailed along the coast in 1903, at which time vaccination was very generally practised. In the British West Indies vaccination has long been compulsory.

Sex and Brain.—Dr. J. de Körösy, director of municipal statistics at Budapest, read a paper before the British Medical Association, giving the results of twenty-seven years of observation in the schools of Budapest regarding the relative intellectuality of the sexes. He found equality to exist in the earliest school years, followed by a gradual increase, considerably more rapid among the girls, so that at the end of the school period the results of brain tests were all in favor of the female sex. His conclusion was that the feminine intellect developed more rapidly than the masculine, but as the great work of human progress has been accomplished by males, it was fair to assume that there was an early turning point where the intellectual activity of women seemed to be arrested.

Wounds From Japanese Small-Arms.—Interesting reports have been made by Russian surgeons concerning the effects of Japanese bullets upon the soldiers of the armies of the Czar. These surgeons say that the balls from the rifles of the warriors of the Mikado are of such size, shape and weight, that they make small, clean wounds, and many of the Russians who are put out of the fighting on battlefields are speedily restored to a sound condition. It is not denied, however, that the balls are effective enough for practical purposes in crippling and disabling infantry while the clash of arms is actually in progress, and he would be cruel and pitiless, indeed, who would desire a higher death rate among the opponents of the island empire.

Diphtheria in Newark.—The Board of Health will adopt drastic measures in an effort to prevent the spread of diphtheria in Newark. There has been an increase in the number of cases in the last two weeks, and it is feared, now that the schools have opened, that a still greater number of cases may be reported. In the week ending September 3, there were 27 cases of diphtheria in the city, and in the week ending at noon, September 17 of the present year, 53 cases were recorded.

University of Vermont Buildings.—In a circular letter recently addressed to the students and friends of the Medical Department of the University of Vermont, Dr. H. C. Tinkham, dean of that department, announces that the new college building, costing $100,000, will be completed May 1 next. The classes for the coming session will be adequately accommodated in temporary quarters until then.

OBITUARY.

Dr. HENRY RIDGELY, president of the Farmers' Bank of Delaware, and one of the wealthiest citizens of the State, died suddenly at his home in Dover, Del., on September 17. He was ninety-seven years of age. Dr. Ridgely was graduated from St. Mary's College, Emmittsburg, Md., and received his medical education at the University of Pennsylvania. In 1856 he was a delegate to the Cincinnati convention which nominated James Buchanan for the Presidency. The Delaware Legislature appointed him to represent the State in the Peace Congress held in Washington in 1861.

Dr. JOHN L. GORMLY died at his home, No. 430 Ocean Parkway, Brooklyn, N. Y., on September 7. He was born in that section of Brooklyn, thirty years ago. He was graduated at the Long Island College Hospital and later served on the staff of St. Mary's Hospital. He belonged to the Medical Society of the County of Kings.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

Regular Stated Meeting, held Thursday, May 5, 1904.

The President, Andrew H. Smith, M.D., in the Chair.

THE scientific business of the evening consisted of a discussion of the treatment of diffuse peritonitis held under the auspices of the section on surgery.

Diffuse Peritonitis.—The paper of the evening was read by Dr. Joseph A. Blake, who said that the opportunities for seeing diffuse peritonitis at Roosevelt Hospital were frequent because of the amount of emergency work, and that to surgeons in hospitals where no emergency cases came the number might seem excessive in frequency. Diffuse peritonitis he considered as a varying term for which there should be considered to be two forms of disease. One localized through spread beyond its original focus of infection. In this the spread of infectious material was limited by adhesions of the peritoneum and there was true abscess formation. In the second form this limitation did not exist, though here again, according to the time at which the affection was observed, a division must be made. In some cases all parts of the peritoneum are not involved. This was usually because sufficient time had not passed for the process to spread. In the other form of the affection all parts of the peritoneal cavity, except perhaps the smaller peritoneal cavity, were affected. Dr. Blake does not include under cases of diffuse peritonitis the merely serous peritonitis that constitutes the milder form of the infection.

Time for Operation.—With regard to the time for operation there has come a distinct change of view in recent years. The best rule now would seem to be to operate as early as possible. There is no waiting for a reaction that never comes. In this way there is much less shock because nothing can hurt the patient more than wide involvement of the peritoneum. If the affection has become limited, drainage can be made more effective. The less peritoneal surface invaded the better the prognosis. Other points of treatment have also changed in very recent years.

Present-Day Technic.—With regard to the washing out of the peritoneum, practically all are agreed on the usefulness of this procedure, but there is one important consideration. It must not occupy too much time. Delay with exposure of the intestines seriously injures their function, disturbs peristalsis and always increases the mortality. All manipulation of the intestine has this same effect. The ratio of deaths, indeed, may be said to increase regularly with the amount of exposure of the intestines and the handling they have been exposed to. It is the effect of this observation that has made meteorism much less of a bugbear than it used to be. For washing out, a hot saline solution is the best, but if it is poured in the ordinary way through a tube it increases intra-abdominal pressure and causes partial evisceration. It is often hard to get the intestines back under these circumstances. Accordingly Dr. Blake uses a large tube with an exterior outflow tube. From the character of the evacuated water it can easily be seen whether the abdominal cavity is clean. The evacuation is accomplished by means of siphonage and this serves to remove fibrin from the intestines and take away other slightly adherent material.

Drainage.—In many cases after the abdomen has been thoroughly cleaned out the peritoneum can be left to itself and no drainage is required. It must be remembered, however, that infectious material is in the abdominal cavity and that during the course of the lavage some of it may find its way over the freshly cut surfaces of the incision. This will cause suppuration. Hence, even when it is not considered advisable to use deep drainage, a drain half an inch below the surface of the peritoneum will often save the delay in convalescence incident to infections of the abdominal wound.

Postoperative Technic.—The guiding principle is to give the abdominal tissues and the gastro-intestinal tract as complete rest as possible. Hence the stomach is washed out in those cases in which there is nausea, and no food is given until the nausea disappears. If patients are weak, injections of hot saline solution are made, and if patients are very restless, morphine is employed. Where during the course of the operation the intestines are found widely distended and evidently full of gas, not passing material as they should, an opening is made in them and the contents allowed to escape, the incision being afterward closed by a purse-string suture. Dr. Blake has recently seen a trocar for the performance of enterostomy in these cases in which meteorism exists, the trocar causing after a time adhesion to the abdominal wall, but the fistula closes easily afterward.

Elevation of Bed.—If the drainage is employed from the pelvis of the patient then the head of the bed should be elevated. Undoubtedly the action of gravity favors the flow of fluid material toward the end of the tube in these cases and this mechanical factor may prove an important aid. Where the drainage tube is inserted high up in the abdominal cavity, that is above the umbilicus, the foot of the bed is raised and this manipulation has proved helpful.

Illustrative Cases.—Dr. Blake described certain of his cases in which special details seemed of interest. In one case of perforation of gastric ulcer, the patient was not operated upon until forty-eight hours after the perforation had occurred. The contents of the stomach were found in the peritoneal cavity, which was also full of pus. This patient improved after the operation, but succumbed on the fourth day. Another case of gastric ulcer, seen twelve hours after the perforation, though there was a lot of bile and stomach contents and pus, free in the peritoneal

cavity, recovered. The perforation in this case was at the pylorus and in repairing the rent the pylorus had practically to be closed. Accordingly a posterior gastro-enterostomy was made and the patient went on to uninterrupted recovery. In another case of diffuse peritonitis the peritoneum was found covered with spots of fat-necrosis. The symptoms in this case looked so serious that the abdominal cavity was not washed out after the operation. It seemed useless to do so. The patient, however, made a rapid and uninterrupted recovery.

Appendicitis and General Peritonitis.—In eleven cases of appendicitis general peritonitis was found and out of these three eventually proved fatal. The first of these was an alcoholic patient and very obese and death occurred on the eighth day. The second was a young physician who was in rather poor health. Before the operation he had been jaundiced and the case looked very unfavorable. Death took place on the sixth day. In this case the abdomen was reopened when the symptoms became bad after the period of relief afforded by the operation, but this did not give any further relief.. As a rule Dr. Blake has not seen any good from reopening the abdomen. One alcoholic patient, in whom there was widespread diffuse peritonitis, recovered in spite of double pneumonia. In cases of typhoid perforation Dr. Blake has found the use of the two-way tube for lavage especially satisfactory. With regard to drainage in these cases, as he acquires more experience, his drains become smaller. In Dr. Blake's experience, general peritonitis due to an infection from the Fallopian tube is apt to be a little more fatal in its result than that from any other source in the abdominal cavity. His own experience has shown him that there is a large balance of mortality in favor of no drainage, or only of superficial drainage.

Early Diagnosis.—Of course the most important element in the prognosis of these cases is early diagnosis, so that the cases may come for operation early. As a rule, the earlier the diagnosis and operation the less the mortality. In perforation of the stomach or of the pylorus through an ulcer, if the patients come to operation within twelve hours, there is practically no mortality. The outlook is very favorable in typhoid cases also, if the diagnosis be made early. Early removal of the appendix whenever there are threatened symptoms is also an excellent rule. Where there was perforation of the appendix with spreading peritonitis, a few years ago surgeons were satisfied to save one-third of the patients. Now it is felt to be a misfortune to lose one-third of them. Spreading peritonitis, that is, cases in which the affection has not yet reached the limits of the peritoneal cavity are seen oftener now by the surgeon, because of the improvement in diagnosis which brings them earlier into the surgeon's hands. Where the mortality used to be 60 per cent., it is now less than 20 per cent.

Conclusions.—As a result of his experience, Dr. Blake considers that an early operation is advisable in all cases of diffuse peritonitis. This operation should be done rapidly and with as little manipulation of the intestines as possible, but should be done through a rather large incision. Lavage with large quantities of normal salt solution seems to add distinctively to the favorable results in these cases. The surgeon will omit drainage wherever possible and will find it better to employ superficial drainage, that is, only just enough to protect the edges of the incision, rather than deep drainage in all cases where there has not been an extreme infection of the peritoneum, continued over a prolonged period.

Discussion of Drainage.—In opening the discussion, Dr. George Brewer said that there is no unanimity among surgeons as regards the use of drainage for diffuse peritonitis. Years ago, McBurney treated these cases by putting in a number of wicks of gauze in many directions through the peritoneal cavity. He saved many of his cases, indeed seemed to have marvelous results, yet he lost many cases also. Then came the era when drainage seemed to be the most important factor in the treatment of these cases. Large incisions were made, and even, at times, incisions on the right as well as in the appendiceal region, simply for purposes of drainage. After that came a period when some surgeons completely eviscerated the patient and wiped off every coil of intestine. It was owing to the initiative of Dr. Morris that the surgeons generally got away from this mistaken notion of exaggerated interference and returned to simpler methods. Now, the reaction has reached a point where a small incision and a small cigarette drain are considered quite sufficient. The prime factors that make for success in the treatment of general peritonitis now are considered to be rapidity of operation, little interference with the intestinal contents and a cigarette drain for the pelvis. Dr. Brewer does not consider that it is ever safe where there has been real purulent peritonitis, to close the abdomen without drainage.

Removal of Products.—Dr. Eliot said that all surgeons are now agreed on the necessity for rapid operation in these cases, but also consider that certain indications for treatment must be fulfilled. The important points are removal of the cause of peritonitis and also of any products of inflammatory reaction that may be present. This latter purpose is accomplished by lavage with the least possible disturbance of the intestine. Instead of the old method, however, of leaving the abdomen full of normal salt solution, there is a tendency now to have the abdominal cavity dry. Drainage is being made by smaller and smaller amounts of gauze and there seems a tendency to do away with even this. Dr. Eliot considers that a double incision—one intermuscular, the other in the median line just above the symphysis pubis give the patient a better chance for life. The opening in the muscles must be kept open by means of a good bit of drainage material.

Local Abscess.—Whenever nature has established a local abscess, there seems no necessity for drainage. The case has been taken care of much better than the surgeon can do it. The cavity will be obliterated and the muscles much less weakened by simple evacuation. With regard to the necessity for drainage where peritonitis is more general, a recent case illustrates its advisibility. The patient was suffering from general peritonitis and from a condition of almost complete absence of pulse, yet was restored to a good general condition by operation, lavage and drainage. Four days after the beginning of his recovery the drain was removed and there was a relapse into a very unfortunate condition. All the symptoms subsided, however, with the reinsertion of the drain. If surgeons had the facilities for knowing the nature of the germ present in certain cases of peritonitis, they would be in much better condition to judge as to the necessity for drainage. In nine out of ten cases there would seem to be very little necessity for drainage; in the tenth case, however, failure to use the drain would almost surely be fatal.

Prognosis and Appearance of Intestines.—In certain cases the intestines are distended, but still retain their glossiness, in others they have acquired a sodden look, having lost their shiny smoothness and seem to be as far removed from the lively hue of the normal intestine as can well be imagined. Whenever the sodden appearance of the intestines is noted, in Dr. Eliot's experience, there is distinctly a bad prognosis. This is true even though the patient's general condition may not seem to portend a serious result and even though there may seem to be a favorable reaction after the operation. There is evidently, in these cases, some disturbance of the important function of the peritoneal coat of the intestine by which vital resistance is kept up.

Virulent Forms of Peritonitis.—Dr. Boldt said that gonorrheal and tuberculous peritonitis are the most serious forms with which the surgeon has to deal. There is often a rapid peritonitis which develops from acute gonorrhea. The peritoneum in young, healthy persons, however, seems to have a reasonably good resistance to the gonooccus and the infection becomes walled off and they recover. The pneumococcus, when it exists in the female pelvis, is apt to be especially virulent. If the tube, for instance, affected by the pneumococcus be ruptured during operation, a fatal peritonitis is very likely to develop, if the peritoneum should become infected. With regard to tuberculosis of the peritoneum, statistics are apt to be misleading. Patients may be much improved for months, be reported cured, and then have a relapse of the condition which proves fatal. The form of tuberculous peritonitis present is important. Dry peritonitis is the most serious. On the other hand serous peritonitis, where there is considerable ascitis is the most amenable to treatment.

Gynecological Peritonitis.—Dr. Boldt said that peritonitis, from the forcing of fluid through the tube into the peritoneal cavity, during the course of douching the uterus, is usually not severe. It depends, of course, to a great extent on the irritating nature of the fluid and the possibility of there having been any infectious material in the uterus or tube, before the injection was made. Practically all that is needed for its treatment, however, is the application of cold and the securing of absolute rest. With regard to peritonitis due to foreign bodies in the peritoneal cavity much more radical and immediate treatment is needed. Usually this occurs as the result of tumor with a twisted pedicle or from a gangrenous cyst as a consequence of pressure or torsion. The rule must be in these cases to operate as soon as symptoms are serious, for delay only makes the condition worse and weakens the patient rendering the eventual outcome of operation more doubtful.

Drainage in Women.—While there may still be doubt as to the advisibility for the employment of drainage in men suffering from diffuse peritonitis there seems to be no doubt in the case of woman, that drainage should be made through Douglas's *cul de sac.* This is really a natural drainage outlet and thorough evacuation of materials within the peritoneal cavities can be secured. The material used to secure drainage, however, should not go all the way into the peritoneal cavity but should only keep the tissues just outside of it freely open. In order to assist drainage the head of the bed should be elevated and the best of results are accomplished by this simple manipulation, which of late has come to form so important a bit of technic in the treatment of peritoneal conditions.

Cellular Resistance.—Dr. Robert T. Morris said that two things must always be considered in the treatment of peritonitis. The first indication is to remove mechanically whatever is causing the peritonitis which would seem to indicate that washing and thorough cleansing of the abdominal cavity must be the rule. There is, however, a second principle of treatment that must not be lost sight of. This is that the cells of the peritoneum are perfectly capable of disposing of an immense amount of infectious material, if they are only not overloaded with it. Anything that injures these cells then must be considered as a serious disadvantage for the patient. If we were to take one of the healthiest policemen in New York and insert half a yard of gauze into his peritoneal cavity he would almost surely not be able to walk to-morrow. The result of the shock of the presence of this material would prostrate him. Therefore, in the case of an ailing patient the great care must be exercised not to subject him to such irritation unless it be absolutely necessary. It would seem, however, that lavage of the peritoneal cavity with careful precautions to keep the incision open for some time does no good. Certainly the present tendency is toward doing as little as possible that is absolutely consonant with fulfilling surgical duty. The present surgical rule might be stated: Get into the abdominal cavity as soon as possible, get out as soon as feasible and leave the patient as much as possible to himself. There are surgeons who close the abdomen without any drainage. There are, in this, however, two extremes, Scylla and Charybdis; and both must be avoided.

Immediate Closure.—For two years Dr. Morris has preferred to do, in most cases, an immediate closure of the abdomen. A large portion of these cases recover very well. Perhaps, indeed, better than by any drainage method, however well arranged. On the other hand, some of the patients develop abscesses in the abdominal wall itself, and especially in the fatty layer of it, and these abscesses are particularly difficult to treat successfully and they are apt to hang on for a long time. Sometimes it takes as long as three months for the patient to get over them entirely. In cases where immediate closure is made the patient runs a temperature for several days and the surgeon is apt to be discouraged at first. Yet the method gives good results.

Peritoneal Endothelium.—Anyone who knows the construction of the outer layer of the peritoneal covering of the intestine, with its delicate endothelial cells lying side by side and the arrangement of the openings of lymphatics between them will realize how easy it is to disturb nature's protective mechanism of absorption here. Any handling of the intestines is almost sure to disarrange these delicate cells and close the lymph channels. Hence any active drying of the intestines is certainly wrong. Even lavage under pressure would seem a doubtful procedure and anything that causes portions of the intestines to find their way outside the abdominal cavity, whence they must be forced back again, is almost sure to do the patient more harm than good.

Dr. Wyeth said that a brief operation, a small incision and a minimum of traumatism are the ideal in the modern operation upon the peritoneal cavity. His own practice is to wash the abdomen out under pressure by means of a reservoir rather high above the patient. Drainage is, however, extremely necessary. Most of his septic cases have occurred from unsatisfactory drainage. A good rule is to keep the head of the bed up and drain from the pelvis.

Dr. Walker said that success in the treatment of peritonitis depends upon the condition that is found. If the peritoneal covering of the intestine is dark and sodden without the shiny glistening appearance of life, then the prognosis is bad. Any serum that is left in the abdominal cavity is almost sure to act as a culture medium for micro-organisms. Hence the necessity for drying out the peritoneal cavity. Where there is much exudation, a large drain should be employed.

Dr. Wiggin said that a large drain only gives occasion for additional adhesions. A small drain helps the abdomen to get rid of infected, material, however. The absence of such drainage is almost sure to lead to infection of the abdominal wound. Where there is distention of the intestines from accumulation of gas, the intestines should be opened, for this gives great relief to the patient's respiration. Respirations of sixty to the minute will sometimes drop to thirty-five immediately after relief was thus afforded.

Dr. Farquhar Curtis said that when lavage was first introduced he believed in the use of a large tube and so had special Chamberlain tubes made for himself. Now he uses smaller and smaller tubes and less drainage and gets better results. Undoubtedly one feature in these better results is the smaller incision and the less traumatism inflicted. The peritoneum is perfectly capable of caring for infectious material, if it is not injured.

Long Incision.—Dr. Torek said that he has treated eight cases of diffuse peritonitis, all of which recovered, though he used the old barbarous method of a long incision, one of the incisions reaching from the ensiform to the pubis. Lavage was done very thoroughly by pouring water from pitchers directly into the widely opened abdominal cavity and the intestines are thoroughly washed off with the hand. No drainage, not even a small cigarette drain is employed after the operation and the wound is closed immediately and completely. Three cases recovered with primary reunion. Three had suppurating stitch wounds in the track of the through-and-through silk sutures which he employs. These subsided after reunion of the edges of the incision layer by layer. There was one intramural abscess and one intraperitoneal abscess, though this occurred near the umbilicus on the left side, far removed from the original focus of infection, to which, if anywhere drainage would have been thought necessary. These cases were done twenty-six to fifty-four hours after the beginning of peritonitis, though Dr. Torek considers that after forty-eight hours the prognosis is very poor.

Variations in Virulence.—Dr. Berg said that all purulent exudates are not of the same nature nor as virulent. Some cases of purulent peritonitis with intensely fetid pus all over the peritoneum will get better if the original focus of infection be removed. At times, the morning after the operation such patients will be reading the paper. Other patients that seem much less seriously affected do not improve but may even prove to be fatally affected. Hence the necessity for demanding what is purulent peritonitis. Whenever the peritoneum is shiny, its absorbent power remains. Whenever it is dark and sodden, it does not allow absorption and simply furnishes a culture medium for micro-organisms. It not infrequently happens in cases where peritonitis has been the consequence of typhoid perforation or of the perforation of a gastric ulcer that the septic material in the abdominal cavity comes in contact with the wound margins and infects them, causing serious septic or even gangrenous processes. Great care should be exercised then for the protection of the edges of the wound and drainage should be employed. Riegel showed that in animals death might be produced from the shock of injections of normal salt solution into the peritoneal cavity. Even lavage then may be contra-indicated. If the peritoneum is to be trusted, it must be trusted completely.

Dr. Blake, in closing the discussion, said that the present tendency is to use ever less and less drainage. Septic material must be removed from the abdominal cavity, especially such substances as bile and food material from the stomach, but very little manipulation must be allowed. If the peritoneum is shiny it can be depended on to take care of itself. Superficial drainage is all that is necessary in most cases.

THE OBSTETRICAL SOCIETY OF PHILADELPHIA.

Stated Meeting, held Thursday, May 5, 1904.

The President, R. C. Norris, M.D., in the Chair.

Rupture of the Uterus, with a Critical Review of Fifty Cases from the Standpoint of Treatment.—This was the paper of Dr. W. A. Newman Dorland. He said rupture of the parturient canal at any point is an accident of labor, and more rarely of pregnancy and the puerperium, which is associated with more or less danger to the patient, either immediately from hemorrhage and shock, subsequently from sepsis and peritonitis and more remotely from its tendency to the ultimate development of prolapse of the pelvic viscera. The rupture may occur in the uterine wall from the fundus to the internal os; it may consist merely in a tear limited to the cervical tissues, or extending outward from the neck into the vaginal vaults and pelvic connective tissue; it may occur in the vaginal wall with or without the development of a pelvic hematoma; or it may take place in the perineal tissues during the delivery of the head through the vulvar ring. The most serious form is that occurring in the womb itself. This may develop spontaneously, but more frequently is traumatic in origin. It is an extremely rare accident, occurring about once in 4,000 cases of labor. During the past three years (1901-3) there have been recorded in the world's literature 49 cases of uterine rupture, the case reported in this paper completing the even half hundred. Twelve of these cases resulted fatally, giving a mortality of 24 per cent. Three of the patients died of hemorrhage or shock before any course of treatment could be instituted. Sixteen of the women were treated expectantly—that is, with uterine and vaginal tamponade and drainage—and of these four perished (a mortality of 25 per cent.) greater, as will be noticed, than the total mortality for the fifty cases. Thirty-one of the patients were treated by operation, either suturation of the uterine wall, the Porro operation, or total extirpation of the uterus, and of these cases five died. This yielded a mortality of 16$^{4}/_{31}$ per cent. The great superiority of the operative course of treatment according to the modern technic is evident from this showing.

An examination of the records as condensed in the table accompanying this paper, will throw some doubt upon the accuracy of the diagnosis in a few of the cases. The symptoms manifested might heve resulted from the development of a broad ligament hematoma or other variety of puerperal hematoma. Such cases would recover naturally in most instances under the expectant course of treatment instituted. Again, of the sixteen cases treated expectantly, seven, or 43¾ per cent, showed an incomplete tear of the uterine

wall, while of the operative cases only one showed a rupture of this nature. All of these eight cases recovered. Of the nine cases of complete laceration of the uterine wall treated by tamponade and drainage, four, or 44.4 per cent., perished. It we compare this with the thirty cases of complete rupture with five deaths—a mortality of 16⅔ per cent.—the inference must be obvious.

The conclusions to be drawn from this brief study are as follows: Incomplete lacertions of the uterine wall, if the hemorrhage be moderate and the diagnosis accurate, may be well treated by careful vaginal and intra-uterine tamponade and an expectant course of treatment. Complete lacerations, the peritoneal cavity being opened should, under unfavorable circumstances, such as uncleanliness of locality and lack of surgical appliances, be temporarily treated by intra-uterine tamponade and the administration of astringents and stimulants; the patient should then, if possible, be conveyed to some hospital and the abdominal cavity opened. Under favorable circumstances the abdomen should be opened as speedily as possible and the rupture in the ulterine wall sutured in suitable cases, or a Porro operation or a total extirpation be performed, according to the nature of the case.

Dr. L. J. Hammond, in the discussion, said: It may be of interest to refer to the case which, while not under his care at the time, has become familiar to him by reason of the records having since been placed at his disposal. The woman was thirty-five years of age and was brought to the lying-in institution in active labor on the morning of July 7, 1902, with labor apparently progressing favorably according to the record, until 8 P.M. the same day, when she suddenly screamed from an acute pain in the lower abdomen and at once the woman's condition was apparent to the nurse as something out of the usual. The pulse suddenly went to 140 and was very weak and thready. At 1.30 A.M. the pulse was so weak and thready that it was impossible to count it and contractions had about ceased. The physician then undertook to deliver by forceps, and for reasons not stated in the record the forceps were abandoned and version undertaken. The woman dying, however, before delivery was completed. The autopsy made a few hours after death was confined to an examination of the abdominal contents only. This cavity was filled with large quantities of liquid and clotted blood, generally disseminated throughout the intestines. There were also firm adhesions between the abdominal viscera. The uterus was about the size of a child's head. There was a rupture of the anterior wall of the vagina which extended into and communicated with the peritoneal cavity. The cellular tissue between the bladder and uterus seemed to have been torn away, and the vesico-uterine ligament was torn and the uterine muscle laterally denuded of its peritoneal covering for some distance. This was regarded as the source of tremendous hemorrhage within the abdominal cavity. Dr. Hammond thinks this case would confirm the position taken by Dr. Dorland that operative interference is alone, and at once to be employed in cases of this kind. Personally Dr. Hammond has had no experience in dealing with ruptures of the uterus, except in partial ruptures, as seen in extra-uterine pregnancies, but concluded this from general surgical principles.

Dr. Daniel Longaker said he regretted that he did not hear all of Dr. Dorland's paper. He had seen one case of rupture of the uterus. This was about twenty-five years ago, in his very first case of labor. He had a very distinct recollection of the regularity and severity of the pain which came to a certain climax when the woman screamed violently, and accused him of having killed her. Of course, he had done nothing, beyond observing the course of an impossible labor. It was fortunate that some of his chiefs came to his assistance, or he might have fared as badly as the woman herself. She was a large Irish woman, giving birth to her ninth child. The child escaped into the abdominal cavity and the woman died four or five hours afterward, undelivered. The surroundings, of course, were very poor and miserable. Dr. Longaker was only a student, and none of those whom he called, seemed to have sufficient courage to deliver the case. The next case of rupture of the uterus which he has knowledge of, occurred in the practice of a midwife, who some years ago was in the habit of sending for him in her difficult cases. The child was already delivered when he reached the house, and the woman was in shock, suffering from hemorrhage, the placenta being undelivered. He passed his hand into the uterus, delivering the placenta, and passed it into the peritoneal cavity and grasped bowel. That patient died very promptly. The third case which Dr. Longaker saw was in an impossible labor in which several attempts had been made to secure delivery by forceps, the child's head being arrested above the brim. The woman was giving birth to her first child. He found her in profound shock, pulseless and with an exsanguine look. The uterus was ruptured from the vaginal juncture and well up into the body. The fetus had not escaped entirely from the cavity. Delivery was made on a dying woman. He has not seen rupture of the uterus in any case where version was either made or unsuccessfully attempted. He shall probably have a little more to say on this subject in his paper.

Dr. Stricker Coles said: In a case in which he had been asked to repair the lacerations, on making an examination he found the intestines were in the opening. A douche of bichloride had been given the night before. He found more than ordinary abdominal distention and the woman was in a bad condition. After finding a rupture in the peritoneal cavity, he hardly knew what to do. She would not stand being removed to a hospital. He therefore put in a glass drainage tube and washed out the wound with salt solution, but the woman perished soon afterward. The next case was a multiparous patient in her fifth pregnancy. It was a case of hydrocephalus. There was breech presentation and the head was impacted. The case was delivered with great difficulty and craniotomy had to be done on the aftercoming head. Making an examination for lacerations, he found a tear in the peritoneal cavity. The patient had just been up for four or five days from a bad case of typhoid fever. The result of the laceration was so severe that in her weak condition she perished soon after delivery. In both of these cases abdominal section might have saved them if they had been seen earlier.

Dr. L. J. Hammond said he would like to add a part of the history of the case not at first referred to, which is important. The first labor was a very difficult one necessitating instrumental delivery, then followed this labor and extensive bilateral laceration. The second pregnancy she aborted at the fifth month, and following this abortion there was a very protracted recovery, due, from the history of the case, to the presence of extensive peritonitis. He mentions this because Dr. Dorland has said that many cases show cicatricial conditions of the uterus to have previously existed. As a matter of fact, the cicatrices from these lacerations were not at the point of rupture, it being, as before stated, along the anterior wall or roof of the canal and seemed to bear no relation to this weakened area.

Dr. George M. Boyd said he did not hear all of the paper, but the review of the fifty cases is, he thinks, of a great deal of interest, particularly because of the rarity of rupture of the uterus. It has been his good fortune never to have seen a case of so-called complete spontaneous rupture of the uterus. He has had a number of cases of incomplete rupture, particularly of the lower segment extending into the broad ligament, and he remembers one case of traumatic tear through the fundus from the use of placental forceps. Incomplete rupture of the uterus is probably more frequent than one realizes. It seemed to him that with the symptoms of hemorrhage the course to follow would be to make a careful exploration of the uterus, and determine whether the tear is complete or incomplete. If it is complete immediate section and repair of the injury should be done by laparotomy. If the tear is not complete, it should be treated by tamponing the uterus. Some operators fear rupture of the uterus after celiohysterectomy. In the cases he has seen there seemed to be no tendency to rupture in second pregnancies.

Dr. Dorland, in closing, said he would like to thank the gentlemen for the most interesting discussion given to his paper. In the table accompanying the paper which he had read, a study of the clinical features of the cases reported shows some very interesting points, some of which have been touched upon in the discussion. For instance, the frequency of multiparity in this accident is well shown. In the 50 cases reported there were 24 of the women who were in their fourth pregnancy or over, one being in her twelfth gestation. Thus, almost half of the cases showed advanced multiparity, and this may have had something to do with the development of the rupture. In the record of the cases reported in the discussion he noticed that nearly all—if not all—occurred in private practice, and almost all resulted fatally. The statistics reported by Schmidt and others, come largely from hospitals, and Dr. Dorland firmly believes that if the obstetrician were to collect a similar series of cases, all occurring in private practice, the mortality would be almost absolute. Another feature noted in his table is the large percentage of pathological obstetric conditions, such as hydrocephalus and breech presentations, and cases associated with degenerated muscle-tissues, which was probably the condition in the case mentioned by Dr. Coles. Again, the frequency of incomplete rupture must be much beyond the actual showing of records. He recalls reading somewhere the statement made by some abdominal surgeon that interstitial pregnancy existed much more frequently than now thought, and that it no doubt ruptured frequently into the uterine cavity, giving the symptoms only of an abortion without any indication of the occurence of an incomplete uterine rupture, which, in reality, does exist.

Version in Delayed or Obstructed Labor.—Dr. Daniel Longaker read this paper. By the exercise of great care, under complete etherization version is usually feasible in transverse presentations even though ergot had been given and an arm has been prolapsed for some time. Celiohysterectomy is, however, indicated in the presence of actual or impending rupture of the uterus. Version is of special value in cases of incipient transverse presentation. Should all expedients fail to secure engagement and descent of the head, and speedy, natural or instrumental termination of the case, which has often dragged along many hours beyond the normal duration, version is often capable of yielding brilliant results. In cases of simple flat pelvis, with direct conjugate not under 7.5 cm. or 8 cm. version is indicated, if the conditions for successful employment of the forceps be lacking. It is not a rival of the forceps at all, but it finds its legitimate place as a supplementary measure in the treatment of relative pelvic contraction. An earnest protest is made against the routine use of the forceps. Such practice leads to bad results to both mother and child. Where the head is arrested above the brim application of the forceps is a procedure of questionable expediency, quite difficult in the absence of relative contraction, while in its presence, it had better not be undertaken. A strong plea is made for the accurate determination of the relation of the fetus to the pelvic canal by inspection and palpation—external examination. Estimating the location, size and compressibility of the head from the outside and above the pelvic brim rather than from below and within, exclusively, as is the too uniform rule. This rigid plan of examination must antedate labor, especially in primiparæ, for six or eight weeks, if uniformly satisfactory results would be attained.

Dr. R. C. Norris, in the discussion, said many of the profession remember reading the former earnest discussions on this subject by Goodell and Ellwood Wilson in this hall. This Society now comprises a new generation of obstetricians, and for one's own satisfaction one must thrash out this subject. It is one full of interest, and Dr. Norris trusts it will have a generous discussion. The Society shall be glad to hear from those present who have clear-cut ideas to express or experiences of this type of case to relate.

Dr. Oliver Hopkinson said: In treating these so-called border-line cases one encounters many difficulties. He thinks the profession should be guided by the position of the head. If a floating head, version is the easier operation of the two and more safe for the mother. If impacted or partly engaged, he would make an attempt at forceps delivery first. He was very much interested in Dr. Longaker's reference to his case of impacted transverse presentation. With the child lying transversely, with the shoulder or arm impacted, it is almost impossible to get the hand around and grasp the foot, but gently working the hand around and grasping the pelvis, and pushing up the head, the obstetrician will succeed in getting the pelvis of the child at the superior strait. Dr. Norris remembers one case he saw in consultation, in which the membranes had drained for a number of hours. The man had attempted to do version, and was unable to reach a foot. The back was anterior, as it usually is in these cases, and it was rather easy for him to pull down the pelvis of the child. He did what might be called pelvic version instead of podalic version. Dr. Norris feels that further attempting to do a podalic version might have ruptured the uterus.

Dr. Stricker Coles said he thought the treatment of these cases in which the arm is prolapsed and the back anterior were not very difficult. In nine cases reported he had little difficulty, because the back can be made to revolve along the anterior abdominal wall and the breech can easily be brought down. If the back is behind and impacted under the promontory of the sacrum, to do version you must shove the entire child up. Attempts at version in such a case is a great mistake, and one is almost sure to rupture the uterus. When the arm has been outside for some time, and is gangrenous, there is only one thing to do—to amputate. After that is done the best thing to do is to decapitate, or decapitate before and deliver the child without any attempt at replacement or version. Dr. Coles said he had very distinct ideas in which cases he would employ version and in which forceps. If he can get the head to engage, he noted carefully the amount of difference

there is between the child's head and the mother's pelvis. If he can put the mother in Walcher's position, and bring the head to engage, he uses the forceps; but, if he cannot get the head to engage, and as he pushes it down he can feel it resting over the promontory of the sacrum on one side, and the symphysis on the other, showing that the head is larger than the pelvis, he would be careful. If there is a slight difference, version is the operation to be done. When you find a large disproportion, Cæsarean section, symphyseotomy, or some other form of operation, should be done. You must measure the pelvis, and estimate the size of the head. He tries to estimate this by fitting the child's head to the mother's pelvis, and on his results in this he bases his treatment. If he can make the head engage, he feels that there is very little difference, and he uses the forceps. Version is a splendid operation, but should not be employed too generally in contracted pelvis, without carefully studying the case.

Dr. George M. Boyd said it is timely that the subject of version was discussed, and particularly version in contracted pelvis. It must be remembered, however, that the profession has made considerable progress in the last decade or two, and that other operative interference has come to our aid. In the days of those celebrated teachers, symphyseotomy and Cæsarean section were not so much considered. He would employ version for transverse presentation, and occasionally, for flat pelvis; but he would consider it a makeshift operation in contracted pelvis. It must be remembered that a fetal mortality of 30 per cent. in breech presentation is on record. Failing with forceps in a generally contracted pelvis, it seemed to him it is better to do craniotomy than to turn, particularly if the forceps had been used faithfully.

Dr. J. S. Raudenbush said that last fall, in a primiparous case, twenty-five years of age, the internal conjugate normal, external conjugate 20.25 cm., the woman started into labor in the morning, and had strong, vigorous pains. She had always been a strong, healthy woman. The head would not flex sufficiently to pass down in the pelvic canal. Between 10 and 11 at night the membranes ruptured, but the head remained in the same position. The anterior fontanelle stayed entirely too low, and he decided that the condition demanded the application of the forceps. These, however, failed and he saw that he could not complete flexion so that the head could come down as it should. The membranes had been ruptured for two hours, and he did not know whether he might not succeed in version, since he could not produce complete flexion. He succeeded in getting the head up out of the pelvis and had sufficient liquor amnii to do version and he delivered a living child. A week later he attended a multiparous woman, a sister of the former patient, and found the head in exactly the same position. Within an hour complete flexion commenced to come on, and there was a normal delivery within three hours of his arrival. The next case occurred within a month in a primiparous woman about twenty-two years of age. Her measurements were practically normal. The external conjugate was 21 cm. and he anticipated no trouble. The woman was a neurotic case, the pains were weak. There was a left occipito-anterior presentation, but the head would not come down. He applied the Simpson forceps and afterward the Tarnier and delivered the child, but it was born dead. He has since regretted that he did not do version two hours earlier when the head was high in the pelvis and the membranes unruptured. About three weeks ago, at the Medico-Chirurgical Hospital, a colored woman with diminished measurements of the pelvis fell in labor. Later in the day the conditions were about the same, there was but little dilatation and the head was in about the same position. He waited until after six o'clock, when he made another examination, having determined upon version; but by that time the head had commenced to flex completely. It was a left occipito-anterior position and there was a beginning of cervical dilatation. He left the case in the hands of the resident. At about 10 o'clock in the evening the case was normally delivered. This case shows that even with diminished measurements neither forceps nor version were necessary.

Dr. R. C. Norris said he had listened with great deal of interest to this discussion, and he thinks it may be taken for granted that in the lesser degrees of pelvic contraction, the mortality for the child is greater following version than the skilful application of the forceps. On the other hand, version is much easier to do than a skilful forceps operation, so that he believes for the man of average obstetric experience, version is the better operation for him to perform. A man with wide experience with axis traction forceps becomes very skilful in their use and will save more babies if he resorts to the forceps. The rapid extraction of an infant's head through a moderately contracted pelvis after version means a sudden compression of the child's head which, in his experience and so far as his reading goes, is more dangerous to the child than the gradual compression as applied with the forceps. In other words, the baby, as it passes through the birth canal head first, has its head gradually moulded and compressed in every step of the labor. He recollects the advice given him many years ago by Dr. Godell, that in cases with a moderate degree of contraction, when the use of the forceps had been decided upon, the operator should not be in too great haste to extract the child through the pelvis. Dr. Norris has learned the value of that in his practice he says. He has put on the Tarnier forceps and made traction and secured some advance of the head. He has taken them off, gone to his room and slept for half an hour, having the nurse call him, when he would put the forceps on again and get a little further advance of the head, to be again followed by removal of the forceps. In this way he feels that he has saved more babies with the forceps than would be possible by version. A practical point is the determination, as Dr. Boyd has said, when it is or is not justifiable to use forceps or version. That is one of the most difficult problems for even the expert obstetrician. The question depends more upon an individual's specially trained knowledge and experience than any other problem of obstetrics. His practice leans toward the least aggressive means of treating these cases, although he takes as much pleasure as any one in doing Cæsarean section. He can only refer to his work at the Preston Retreat. He is preparing a paper embracing some twenty-five cases of induced labor for minor degrees of pelvic contraction. In one of these cases he anticipated especial difficulty and grave risk for the child from induced labor. The woman was therefore allowed to go to term and was prepared for Cæsarean section, but was treated as if she were a private patient in her own home. She was allowed to go into active labor to test Nature's efforts and delivered herself spontaneously, thus saving the Retreat the record of never having had a Cæsarean section in two thousand labor cases. He believes the selection of treatment is a matter of individual opinion and experience, and he thinks the determination of when to employ forceps, when to do version, or when Cæsarean section must be done is one of the most per-

plexing problems in obstetrics to-day. The method to aid such a choice he has found most satisfactory is, after a few hours of actual bearing-down pains, to study the distance between the promontory of the sacrum and the sagittal suture, as the head lies transverse in the pelvis. The degree of lateral flexion and the distance between the sagittal suture and the promontory indicate fairly well the relative disproportion between head and pelvis. A distance of two or more centimeters favors the use of the forceps. This has guided him sufficiently to avoid doing Cæsarean section on several occasions. The woman must be examined under ether. He agrees with Dr. Boyd, that if forceps are used first and they fail and version follows, few babies would be delivered alive. The physician should make up his mind before he starts to operate which he must do, and then proceed. If he finds that he has made an error of judgment and cannot without undue violence get the head well engaged in the pelvis, he should either turn the case over to someone else; or, if he is a skilled abdominal operator, he should open the abdomen.

He confesses that when he learned the records of pelvic deformity managed by the average practitioner and sees how frequently disastrous instrumental deliveries occur, he believes that forceps are resorted to prematurely and in a violent manner. If moulding and adaptation of the head were permitted to occur or were carefully obtained by gradual compression and traction with axis-traction forceps there would be less injury to the child than is likely to follow rapid extraction after version.

Dr. Longaker, in closing the discussion, said he wanted to thank the gentlemen for participating in this discussion. It is a large and interesting question and one which cannot by any means be exhausted in a single paper. He thinks nothing has been said with which he disagrees. He certainly agrees most fully with the opinion that after an attempt at forceps with failure, resort to version is improper. He does not remember ever having been guilty of such poor judgment. As said in his paper, it seems to him that these two operations can hardly be called rivals. Where the indications for a successful forceps delivery exist, there the indications for a version do not exist, and the converse of this statement is just as true. He would say to Dr. Hopkinson in regard to doing a breech version that he thinks in these cases he has accomplished a great deal with the hand outside. You can pass the hand well down into the flank toward the back and as the uterus has adapted itself so nicely to the fetal outline, you can locate the leg and push it down from the outside so that the deep introduction of the hand into the uterus is not necessary.

In regard to cases alluded to by Dr. Coles, in which there was present a condition of putridity, it is, of course, good practice not to return such an arm. The question of doing hysterectomy would come up in a case so long neglected, and in which there would certainly be infection. In the case in which an arm had been prolapsed for twelve hours, he expected to find such firm impaction that version would be impossible and went prepared to do embryotomy. It is a simple thing to imitate that which occurs under the natural forces of labor—spontaneous involution. It would not be a difficult thing to open the thorax, eviscerate the child and allow it to double up in the pelvis and thus simulate the process of spontaneous evolution. He agrees with Dr. Boyd in the inadvisability of resorting to version after the forceps have been employed. In regard to Tarnier's forceps, he is in the habit of using it in high application, but is not enthusiastic about the results where there is any decided degree of contraction to be overcome. He agrees most thoroughly with the views of the President regarding the expediency of inducing premature labor. He has had several cases during the past winter, in which the results have been all that one could desire. The last case was an obliquely contracted pelvis due to coxalgia in childhood. The woman fell into his hands in her first pregnancy and the degree of contraction was estimated. She accepted the advice to have labor induced in the thirty-second week, and gave birth to a fine infant weighing a little under seven pounds and the child continues to be a perfect specimen. In her second labor a few months ago the same plan was followed and delivery was remarkably easy. The induction of labor in the second case was the easiest thing possible. The woman received a number of douches by way of preparation, and at about four o'clock in the afternoon Dr. Longaker began the active procedure of the induction of labor, consisting in the introduction of a small McLean bag. Both sides were dilated at once and in about half an hour she expelled the bag, and before the nurse could call the Resident, four hours later, the baby was born and has done well. There is no question as to the advisability of this operation.

BRITISH MEDICAL ASSOCIATION.

Seventy-second Annual Meeting, held at Oxford, England, July 26, 27, 28 and 29, 1904.

(Continued from Page 569.)

SECTION ON TROPICAL MEDICINE.

Human Trypanosomiasis and its Relation to Congo Sleeping Sickness.—Drs. Christy, Dutton and Todd gave a report of the Liverpool School of Tropical Medicine. The expedition arrived at Leopoldville on November 21, 1903. Two of its members who had made a short tour through the cataract region arrived a week later. During their journey through this district, in which Congo sleeping sickness was said to be extremely prevalent, many cases, with very anomalous symptoms, but called sleeping sickness, were seen. As already stated in a first progress report, trypanosomes were found in the peripheral blood of some of these cases. It therefore became necessary to commence a clinical study of human trypanosomiasis in order to see what relation it bore to Congo sleeping sickness. Leopoldville offered particular advantages for such a study, and the members of the expedition decided to remain there for a few months. A large bungalow was placed at their disposal by the Congo Government, and, through the kindness of Dr. Grenade, the State Medical Officer, and Dr. Broden, Director of the Leopoldville Bacteriological Institute, the patients at the native hospital, a good proportion of whom were infected with trypanosomes, were given to the expedition to study. In addition to this, the presence of about 2,000 State employees—laborers, soldiers, etc.—afforded an easily-accessible healthy native population. Later, the hospital for natives was found unsuited for a complete examination of the cases, and a new structure was built, and supplied with the necessary appurtenances through the kindness of the local government. The members of the expedition have therefore for four months been in a position to keep patients under continued and careful observation. Out of a total of 465 natives, coming from all parts of the Upper Congo, as well as the districts round Leopoldville, where they were examined, 54 were found to have trypanosomes in their blood, and out of 707 examined at Boma, Matadi,

and in the Cataract Region of the Lower Congo, 49 were found to be infected with them.

In the British Colony of the Gambia only six cases of human trypanosomiasis were found among 1,043 natives. These Gambia cases presented no definite symptoms of illness, and nothing abnormal was detected, with the possible exception of an occasional rise in temperature and increase of pulse frequency. In the Congo we have also seen examples of the mild Gambian type, but the majority of our cases have shown marked symptoms of illness. From a close study of the Congo cases, it becomes evident to us that there is no well-defined line of demarcation between these two forms of the disease, though, for descriptive purposes, we here propose to consider them under three main headings, A, B, and C.

Type A. Cases with no definite symptoms of illness.

Type B. Cases with few symptoms.

Type C. Fatal cases showing well marked symptoms, the most notable being fever, lassitude, weakness and wasting.

It is significant to note that a large percentage—36 out of 44—of those classes under types B and C were believed by their friends to be suffering from "sleeping sickness."

We have seen cases coming under type C, in which no sleep symptoms were ever present, as well as cases in which some of the classical symptoms of sleeping sickness were noted. We therefore subdivide type C into: 1. Fatal cases showing no sleep symptoms. 2. Fatal cases showing sleep symptoms.

Here again no sharp division is possible between these two groups, still, we think it not inadvisable to separate them, since from our experience here, we believe that altogether too much prominence, as a diagnostic feature, has been given to what appears to us to be only a minor and inconstant feature of this disease, namely, sleep. The prominence given to this systom has tended to disguise the true nature of Congo sickness which is, primarily at least, a trypanosome infection.

Trypanosoma Gambiense as Cause of Congo (Sleeping) Sickness.—(*a*) As already indicated, in nearly every case in which sleeping sickness was diagnosed or suspected, trypanosomes have been found in either blood, cerebrospinal fluid or both. (*b*) We have shown that there is a very evident clinical connection between those cases which have only very light symptoms (trypanosoma fever) and the advanced cases of "sleeping sickness" seen in hospital. (*c*) In Gambia there is an undoubted trypanosoma disease in horses which is characterized, in its first stage, by the absence of obvious symptoms; and later by fever, emaciation and weakness. The course of this disease may be chronic and death delayed for a long period. (*d*) The sleeping sickness of the Congo is known to have a long latent period. Symptoms are said to have been developed in some cases two to five years after having left an infected locality. It is interesting to note that natives may be infected with trypanosomes for many months without showing signs of illness. (*e*) Europeans infected with *Trypanosoma gambiense* show symptoms which are quite comparable to those observed in uncomplicated trypanosome infections of Congo natives. (*f*) In Gambia, where cases of sleeping sickness are rarely seen (Dr. R. M. Forde, Principal Medical Officer of Bathurst, stated that perhaps one case a year came under his care), only six out of 1,000 odd natives were found to be infected, by the examination of fresh cover-slip preparations. In an almost exactly equal number of a similar class of natives examined in the same way in the Congo, 46 have been infected. In Uganda, where the disease occurred in epidemic form, the percentage of infection among the general population was still higher. *Duration.*—It has been impossible to decide for how long a period a native may be infected with trypanosomes and still show no definite signs of disease. One man already mentioned is known to have been infected for over a year and is still perfectly well. It would appear from one or two early cases which have been observed that the transition from this "latent" stage to one in which symptoms are noticed may be very gradual. We have only observed eight fatal cases of Congo sickness in which the necropsies showed no obvious secondary infection. The duration of the disease dating from the recognition, either by the friends of the patient or by ourselves, of obvious signs of ill-health, has been two to four months. *Recovery.*—In our experience no native who has shown definite and constant signs of ill-health has recovered. The trypanosomes were found by Dr. Broden on February 7, 1903, during an attack of fever which lasted for a few days. During the last year Dr. Broden has seen no parasites in the blood.

Death.—We do not think that we have sufficient evidence to state that death is produced by the trypanosomes alone. Secondary bacterial infections seem to determine the fatal issue of many cases of Congo sleeping sickness. Thirteen out of twenty-two necropsies performed at Leopoldville showed complications or obvious secondary infections. They were as follows: Purulent meningitis, 4; purulent pleurisy and pneumonia, 1; pneumonia and localized tubercle of lung, 1; localized gangrene of lung, 1; enlarged caseating and breaking down glands in thorax and abdomen. No tuberculosis lesions in organs. (Tubercle bacillus in glands seen in one case), 2; dysenteric ulceration of large bowel (perforation in one case), 2; universal adherent pericardium (recent), 1; infiltration of pus in femoral, inguinal, and intestinal iliac glands (gonorrhea), 1. According to the post-mortem reports of Colonel D. Bruce and Dr. Nabarro very similar lesions were observed in Uganda, where 10 out of 20 necropsies on sleeping sickness patients showed obvious secondary infections, and in three instances purulent meningitis. It will be noted that purulent meningitis has been the most frequent complication both in Uganda and in the Congo. The brain in these cases presents a very abnormal appearance. The convolutions, especially on the upper surface, are covered and glued together by a thick layer of tenacious lymph, and the vessels of the pia arachnoid are intensely congested.

It is evident that such morbid changes are explicable on bacteriological grounds, and we have found microscopically in all such cases an almost pure culture of a diplococcus occurring in small chains. These observations make us doubt whether the acute congestion of cerebral vessels, accompanied by an increase of pia arachnoid fluid containing pus cells, seen by us here, and described by others, as typical of sleeping sickness can be attributed except indirectly to the trypanosome. The Portuguese Sleeping Sickness Commission, Dr. Broden in Leopoldville, and Dr. Castellani in Uganda, have all described bacterial infections in a very large percentage of sleeping sickness cases examined before as well as after death. It must be noted that such purulent changes have not been described in animals dying from trypanosome infections.

Periodicity and Frequency of Occurrence in the Peripheral Blood.—Frequent examinations of the finger blood of trypanosome cases has shown that the parasites may, to the ordinary methods of examination, be absent from the peripheral blood for varying periods. The frequency with which the parasite is obviously present in the peripheral blood bears no relation to the severity of the symptoms.

Number of Parasites Appearing in the Blood.—The number of parasites seen in ordinary fresh cover-slip preparations is generally small, but in some patients very large numbers have been recorded. In two cases a large increase has occurred during the few days immediately preceding death.

Symptoms Associated with Parasites in Blood.—From our observations we cannot make out any definite relation between the temperature and pulse and the appearance of the parasites in the peripheral circulation. A rise of temperature is not necessarily associated with an increase of parasites in the blood. It appears, therefore, that the number or constant presence of the parasites in the peripheral blood bears no relation to the severity of the disease. As a rule, we have found that the parasites occur in extremely scanty numbers in the cerebrospinal fluid, seldom more than 1 to 3 or 4, very occasionally from 10 to 20 to the cover-glass preparation of the sediment left after centrifuging. As already stated, neither at Leopoldville nor anywhere on the Lower Congo, up to the present time have we met with a case of Congo sickness in which sleep has had a prominent place among the clinical symptoms, and in those few cases in which it has been noted a few days before death, or at irregular intervals during the course of the disease, it has not been describable as a deep or continuous sleep, but merely a drowsy or somnolent condition from which the patient was at once aroused by being touched, or perhaps, by being spoken to. On comparing the cases in which parasites were found in the cerebrospinal fluid with those in which they were not found, we see that most of the few cases in which drowsiness was a feature, together with cases in which head symptoms, for example, mild mania, epileptic attacks, flexeur contractions, and convulsive seizures were conspicuous are upon the plus side. On the minus side similar cases are also found, but it is noticeable that there are many of those cases which showed hardly any symptoms, and which, if no fatal complications intervened, lived on month after month in an advanced state of emaciation, retaining their faculties, speech and appetite, etc., almost to the moment of their death. It is therefore not improbable that the presence of the parasites in the cerebrospinal fluid at a late stage in the disease may tend to increase the gravity of the case by predisposing to one or other of many complications, or in other ways hasten a fatal termination; but that this is not invariably so is proved by at least two of our cases, one of whom is the most sturdy patient under observation. No animals inoculated with material in which trypanosomes were seen taken post mortem from cases of trypanosomiasis have ever become infected. Parasites have been seen in the peripheral blood of infected animals only at more or less irregular intervals. Guinea-pigs have perhaps shown themselves the most satisfactory of ordinary laboratory animals, since, as a rule, when once infected parasites are constantly present in large numbers. Death, in the small number of our infected animals which have died, can in no instance be certainly said to have been due to the trypanosome alone. These are all points in which the Congo trypanosome resembles *Trypanosoma gambiense*. In addition, the "incubation period," that is the period intervening between the inoculation of small or medium doses of infective material, and the detection of the parasite in the peripheral blood of the experimental animals, is much the same for both parasites.

	Congo Trypanosome.	Trypanosoma Gambiense.
Rats	5 to 20	7 to 20
Mice	5 to 16	6 to 7
Rabbits	17 to 27	21
Guinea-pigs	11 to 25	12 to 21

Monkeys of two different varieties, both belonging to the subfamily *Cercopithecus*, have been infected. Only one has shown slight symptoms of ill health. On two occasions a slight rise in temperature and loss of vivacity has accompanied one of the irregularly appearing intervals during which parasites have been seen in the peripheral blood. This monkey has been infected for nearly three months. We have again failed, even with large doses of blood containing huge numbers of trypanosomes, to infect two dog-faced monkeys (*Cynocephalus*).

Transmission Experiments.—We have attempted to repeat the transmission experiments made by Bruce, in Uganda, with the tsetse fly. These flies are rather numerous in the bush along the river banks on either side of Leopoldville, and a fair number are daily brought to the laboratory by a gang of boys supplied for the purpose by the local authorities. Practically all the flies brought in by them have been *Glossina palpalis* (native name, "mavekwa"). Two specimens of *Glossina fusca* have been brought in during the past four months. Unfortunately we have had the greatest difficulty in obtaining monkeys, and have only been able to use two for these experiments. Both in the Congo and in the Gambia experiments have shown that the guinea-pig is, perhaps, the laboratory animal most susceptible to *Trypanosoma gambiense*. We therefore determined to employ it, lacking monkeys, in our transmission experiments. At the time of writing both experiments with monkeys remain unsuccessful, and only one, a direct transmission experiment with guinea-pigs, in which the flies were made to feed alternatively on an infected and an uninfected animal, has given a positive result.

Cerebrospinal Fluid in Sleeping Sickness (Trypanosomiasis): 104 Lumbar Punctures.—Cuthbert Christy, in his report on this section of the topic writes: The majority of the punctures recorded in the accompanying tables were performed whilst working with Drs. J. E. Dutton and J. L. Todd in the Congo Free State. All, with the exception of three, were performed by myself, either at Boma, Leopoldville, posts further up the Congo, or since returning to England. Some conclusions drawn from a number of them are published in our last conjoint report. Out of a total of sixty-four natives operated upon, the fifty-four in Table I were proved to be cases of sleeping sickness by the discovery of trypanosomes in the blood or cerebrospinal fluid, or in hydrocele fluid, while in the remaining ten in Table II parasites were never found, although the majority of them were more or less suspicious cases, and all were in hospital at Leopoldville. In thirty-four of the fifty-four sleeping sickness cases the parasites were found sooner or later in the cerebro-

spinal fluid, whereas in twenty of them no parasites could be found, although in one case (17) the fluid was examined on five occasions.

The total number of cases here recorded is too few to permit of any very definite statements, but I think it is sufficient to allow of the following provisional conclusions: (1) That in many cases the trypanosomes never find their way into the cerebrospinal fluid, and in those cases in which they do they are more frequently to be found toward the termination of the disease. (2) That the commencement of the fever or other symptoms is in no way correlated to the entrance of the parasites to the cerebrospinal fluid. (3) That a large number of trypanosomes in the cerebrospinal fluid is rare, but when it does occur there is usually an access of temperature. (4) That the parasites may come and go in the cerebrospinal fluid as in the blood. (5) That enormous numbers may appear in the blood without appearing in the cerebrospinal fluid, and, to some extent, vice versa. (6) That when trypanosomes are present in the cerebrospinal fluid its white cell elements are apt to be increased. (7) That in cases where the parasites gain access to the cerebrospinal fluid early in the disease, mania and other head symptoms are more likely to be prominent.

David Nunes Nabarro, working with Colonel Bruce in Uganda on the Royal Society Commission and of assisting with the joint report on sleeping sickness published by the Royal Society, agreed with many of the propositions enunciated by Colonel Bruce.

Sir Patrick Manson said: If Colonel Bruce's contention is proved, the fact that *Trypanosoma gambiense* is the cause of sleeping sickness is a matter of the highest importance; but if, on the other hand, it be not fully proved, to accept it as such, and to found on the supposition expensive prophylactic measures, would be a serious false move. Colonel Bruce's evidence is principally epidemiological not pathological. In none of his experimental animals did he produce the pathognomonic small-cell infiltration of the perivascular spaces of the brain, nor, so far as I know, have other experimenters been more successful. His epidemiological facts apply only to a very limited region, and it may well be, as with its predecessor *filaria perstans*, that the distribution of the trypanosoma will not correspond with that of sleeping sickness. Indeed, quite recently it has been stated that in the German territory at the south end of the Victoria Nyanza the entire population is infected with trypanosomes, but sleeping sickness is unknown there. If this be true, then the trypanosoma cannot be the only cause, or even a cause, of sleeping sickness. Recent work seems to indicate that the trypanosoma is an element in the causation, but that the determinating cause of the pathogenic condition causing the symptoms of sleeping sickness is bacterial, that is to say, that a combination of Castellani's first and last etiological views is the correct one. Colonel Bruce states that trypanosoma infection is always fatal. I know of one case which three years ago had all the clinical symptoms of trypanosomiasis, and in whose blood Dr. Broden, of Leopoldville, found the trypanosoma, who is now quite well, in fact, in better health than she ever has been for years. Apparently she has overcome the infection.

Dr. Sambon remarked that he could not altogether agree with the statement that the tsetse fly (*Glossina palpalis* was merely a mechanical agent in the transmission of trypanosomiasis, and, therefore, that all stages of development of the parasite takes place in the human body. The tsetse fly no doubt serves as an intermediate host. If the function of this fly is merely mechanical, why do not other biting flies, such as the *Tabanus* and *Stomoxys*, which are also prevalent in the sleeping-sickness areas, also help to transmit infection?

(To be Continued.)

AMERICAN CLIMATOLOGICAL ASSOCIATION.

Twenty-first Annual Meeting, held at Philadelphia, June 2, 3 and 4, 1904.

The President, J. C. Wilson, M.D., of Philadelphia, in the Chair.

Presidential Address.—Dr. Wilson referred to the early history of climatology in this country and sketched the character of Benjamin Rush, saying that he was the first great American physician to enter upon the study of this branch of medicine, and referring to his "Inquiry into the Natural History of Medicine Among the Indians of North America, with a comparative view of their diseases and remedies with those of Civilized Nations." This essay was delivered when Rush was only twenty-nine years of age, and has been regarded as a sort of American classic, embodying at once most important points concerning the red man of that day, and valuable conclusions concerning the value of fresh air, cold water and exercise in health and disease. Dr. Wilson also referred to the part Philadelphia is taking in measures relating to the study, prevention and treatment of pulmonary tuberculosis and to the fact that the transactions of the Climatological Association constitute a valuable record of this moment throughout the country.

Climatology as a Study in the Medical Schools.—This was the title of the paper read by Dr. S. E. Solly, of Colorado Springs. He took pains to ascertain to what extent climatology was included in the regular curriculum. Seven colleges stated that it was included, others stated that there was no regular instruction, but that the different professors, sometimes the professor of medicine and sometimes the professor of therapeutics, referred to the matter of climate in connection with the various diseases discussed. While Dr. Solly recognized the value of Dr. Burney Yeo's dictum that "care without climate is better than climate without care." He urged that we must combat the belief that is now being so much advocated in connection with the open-air treatment of tuberculosis, which is that it is the quantity of the air that is valuable, the quality of the air counting for nothing.

Dr. Carroll E. Edson, of Denver, in discussing Dr. Solly's address, said that medical students and, in fact, most general practitioners do not know how to read weather statistics. The elementary principles—the foundations on which therapeutic application must rest are the fundamental principles of meteorology. The time should be spent upon those preliminaries, or the student directed where he could learn those details in some simple text-book, and time thus spent would go far to help him to read correctly meteorological statistics which are at the foundation of description of relative climates; and it would help especially to keep him from reading or to discount the atrocious falsehoods that are put into hotel, railroad or even into some medical publications concerning health resorts. Dr. Guy Hinsdale, of Hot

Springs, Va., in the discussion said that Dr. Wm. Pepper, who was the Provost of the University of Pennsylvania and one of the Presidents of this Association, was one of the first to realize the importance of teaching climatology in the medical schools. About ten or twelve years ago the speaker was appointed the lecturer on medical climatology in what is known as the Spring Course, or the auxiliary course of medicine in the University of Pennsylvania. For a number of years an elective course of ten lectures was given, beginning with two to three lectures on the general principles of meteorology; and the balance was devoted to the general considerations of climate, with reference, toward the end, to certain health resorts, mineral springs, and so on, in this country. At present there are no lectures delivered in the medical school of the University of Pennsylvania on climatology.

Climate of Santa Barbara, California.—Dr. William H. Flint read a paper on this subject. It was accompanied by tables of temperature, rainfall, relative humidity and wind movement for the past twenty-five years. Dr. Flint said that high fogs occur frequently from May until October, but are comparatively rare during the other months of the year. Being high they do not cause the deposit of so much moisture as one would expect from an eastern fog or "sea turn." At Santa Barbara an invalid can spend about two hundred and fifty entire days annually in the open air without running the risk of a wetting. The invalid will find among the hills warmer winter nights than at any other place in California, and may safely spend his time out of doors in all but ten or twelve days of the year, sleeping comfortably, nearly all the year round, under the stars, whose brilliancy is proverbial.

Climatology of Muskoka, Canada.—Dr. J. H. Elliott, of the Muskoka Sanitarium, read this paper. This region is east of Georgian Bay and north of Toronto, and is called "The Highlands of Ontario." The elevation varies from 600 to 1,400 feet, and the latitude is that of St. Paul and Minneapolis. Lakes Muskoka, St. Joseph and Rosseau have an altitude of 750 feet and are connected by waterways. The region considered covers an area of 1,500 square miles, is well wooded, and has a wonderful variety of scenery, with an adaptability of the surroundings to the needs of the neurasthenic and the tuberculous. There is exemption from hay fever. The severe winters are enjoyed by the robust patient and those whose recuperative powers are good, but patients whose capillary circulation is poor and are anemic cannot stand the cold. The winters are free from rain, fog and dampness. The summers and autumn are ideal. The results in the treatment of tuberculosis are most gratifying. There are two sanatoria managed by the National Sanatorium Association of Canada, on Muskoka Lake near Gravenhurst.

Dr. Lawrason Brown, of Saranac Lake, read a paper entitled "Some Weather Observations in the Adirondacks." (See MEDICAL NEWS, August 20, 1904, p. 341).

Dr. Guy Hinsdale, of Hot Springs, Virginia, read a paper on "The Climate and Waters of Hot Springs, Virginia." (Will appear in a subsequent issue of the MEDICAL NEWS).

A Meteorological Study of the Winter of 1903-4.—Dr. Carroll E. Edson, of Denver, Col., read this paper. His paper was accompanied by a series of charts showing that Denver had a mild winter while the cities in the East and Middle West had an unusually severe one; Boston, New York, Buffalo, Chicago and Denver were compared. Dr. Edson showed that while Buffalo had 112 totally cloudy days out of 152, Denver had only 18. He cited all the factors of climate to show that Denver was far better suited for the outdoor treatment of tuberculous patients than any of the other cities mentioned. He claimed that all fresh air is not equally good and that a location like that of Denver offers, by the conditions of its climate, its lack of storms, its absence of cloud and its warmer sunshine, definite advantages for the tuberculous invalid. In the tables there are side columns giving the mean of the last thirty-three years; so that one can see what the slight variation of this one year has been. In the article on Denver in *Wood's Reference Handbook*, the author anaylzed three successive years in detail.

Ocean Bathing.—Dr. Philip Marvel, of Atlantic City, N. J., read a paper on this subject. He cautioned against too prolonged an exposure in the ocean, the habit of going about the beach in wet clothing and too frequent indulgence. The body temperature is lowered and the pulse beats reduced and the economic forces temporarily inhibited, and in some instances seriously deranged. Sea-bathing is contra-indicated in those cases in which the arterial elasticity for any reason has been changed or lost as in arteriosclerosis and capillary fibroses; when the peripheral vessels cease to respond to reflex stimuli; in all cases of recent rheumatism or gastro-intestinal disease.

The Delirium Noticed in Heart Disease.—Dr. Roland G. Curtin, of Philadelphia, read this paper. He said that the great difficulty in studying and classifying the symptoms of advanced heart disease is that it is often hard to sharply separate the symptoms depending on the primary condition from those of the commonly associated complications. The cases are rare, Dr. Curtin having met with only four, in which the insanity was continual. The delirium of the last stage of heart disease differs from that in other diseases in being more melancholy and with suicidal tendencies in some cases. The delirium is almost always after sleeping and it is easy to arouse the patient from the delirious state. The symptoms are quite acute and active in cases unassociated with dropsy and great weakness, but less so in cases with anasarca; more frequent in those advanced in life and the symptom is grave, from which the patient rarely rallies.

Dr. Robert H. Babcock, of Chicago, opened the discussion, saying that after a thorough search he had found only three articles published on the delirium of ehart disease. Riegel's paper, published in 1879, described this form of delirium as a toxemia due to the administration of drugs in the attempt to remove the dropsies and other symptoms incident to the cardiac inadequacy. The patients later may pass into a state of collapse from which they may not recover. The second paper bearing on this subject was entitled "Toxemic Delirium of Heart Disease," published by Eichhorst in the *Zeitschrift für klinische Medizin*, in 1898. Eichhorst calls attention to mental disturbance in certain cases of mild cardial disease which enter the hospital in a state of broken compensation and of dropsy. During the attempt to relieve the dropsy by means of digitalis and diuretin, delirium developed, which either active or of a low, muttering kind, and was preceded by somnolence. As the dropsy disappeared the patients became rational and returned to their former normal state. Eichhorst believed these symptoms were due to the

absorption of toxins incident to the removal of the edema and that they were not due to drugs, since these drugs were not administered in sufficient doses to produce these effects and did not produce like effects in other patients. Dr. Babcock had seen two cases during the past winter in whom this symptom developed. One was a case of mitral insufficiency, with chronic fibrous mediastinal pericarditis, with dropsy, and during the administration of large doses of diuretin for the purpose of carrying off the dropsy, this patient became delirious, his delirium manifesting itself at night. The second was an elderly man, with chronic myocarditis, the vascular form of aortic regurgitation, and chronic interstitial nephritis. This man, when dropsical and the edema was being removed by proper remedies, became mildly delirious, not recognizing objects in the room; talking about business and mistaking a picture in the room for a powerful Irishman who wanted to get into the bed and turn him out. He frequently said that he could breathe if he could start his breathing first before that big Irishman in the corner did. It was a singular form of delusion. In both these instances Dr. Babcock inclined to attribute the mental disturbance to the effect of toxins; although it is conceivable that some degree of cerebral edema might be responsible for the condition. He thinks it is one of great importance and which one should study with a view to more definite facts concerning this symptom, since it appears to be a very important one. One case recovered.

Dr. Beverley Robinson, of New York, said that one seldom has disease of the heart without other disease existing elsewhere as in the kidneys or the brain. Faulty metabolism, not connected with the heart particularly, and reabsorption of poisons through a defective action of the kidneys account for this. Dr. Robinson said that he had seen in private practice particularly, what he considered to be a neurotic heart. They are associated with anemia, a diastolic bruit, low hemoglobin, and a low specific gravity of urine.

Dr. De Lancey Rochester, of Buffalo, said that in reference to diuretin, he recalled two cases seen this winter in which there was apparently no disease of the kidney but where there was pronounced cardiac disease; cardiac dilatation resulting from overstrain on top of a previously existing mitral lesion and edema and ascites. He used diuretin to relieve the edema, and in turn a pronounced delirium followed the use of diuretin. Diuretin, or any other stimulating diuretic, is, in his opinion, contra-indicated in any case of cardiac disease associated with which there is existing disease of the kidney; for the relief of the edema we should rely upon the sweating apparatus rather than upon stimulating the kidney; but in these two cases there was apparently no disease of the kidney; the urea was apparently perfectly normal; but still, following the use of diuretin, delirium resulted in quite a pronounced degree. Whether this particular drug has a poisonous effect he does not know; but it was interesting to him when Dr. Robinson mentioned that delirium had occurred during the use of diuretin. In answer to the question from Dr. Babcock as to what dose of diuretin Dr. Rochester used, the latter replied, "one gram four times a day."

Dr. James M. Anders, of Philadelphia, said that after the tricuspid valve becomes incompetent the heart and the lungs no longer bear the entire brunt of the cardiac lesions, but now every organ of the body shares in the work of carrying the burden. We have venous congestion—increased pressure in the venous side of the circulation; and the point that the profession ought to remember in this connection is, that this is a distinctly pathological condition; it means starvation of tissue throughout the entire body; it means accumulation of waste products in every organ in the body; it also implies distinct tissue alterations or changes in the various organs of the body, including naturally the brain. Now other considerations enable the profession to understand why it should have disturbance of the function of the brain in these cases, the same as disturbance of the function of the liver, the gastro-intestinal tract, the kidneys and other organs of the body. This is the explanation of most cases of delirium that sometimes arise in the course of organic valvular disease. Now there is one other causative factor often lost sight of, and that is, the altered blood changes. Under these circumstances a general arteriosclerosis and fibrosis of the viscera are engendered and delirium may develop before any evidence of failure of compensation exists.

Dr. R. G. Curtin, of Philadelphia, said in answer to Dr. Robinson's statement in regard to the associated kidney disease, that was excluded as far as possible to exclude it; there was no albuminuria in the cases at the time the observations were made. He has seen a great many cases where there has been a slight amount of albumin in the urine, in which there has been delirium; but he did not report cases in which this seemed to be a factor. Also, in regard to the subject of diuretin—only four of the cases were treated by diuretin, and one of the cases perfectly recovering was one of the cases put upon that drug. He has used this drug extensively during the last ten years and has never suspected it as a cause of delirium or of any other nervous manifestation.

Mechanical Treatment of Heart Disease.—Dr. Charles E. Quimby, of New York, read a paper with this title. He advocated the use of the pneumatic cabinet for cases of aortic regurgitation. It affords relief to a crippled and overtaxed heart and excels any other measure in the results obtained. In mitral regurgitation the effect is often as immediate and definite, but less in degree and duration. In angina it is *facile princeps* in the rapidity and permanency of relief afforded.

The General Principles of Management of Pulmonary Tuberculosis.—This was the subject of Dr. S. G. Bonney, of Denver, Col. He advocated sanatorium treatment only in certain cases. Continued vigilant supervision is necessary for some cases, but unfortunate or detrimental to others. The influence of the physician himself is the predominant factor. The sanatorium itself being in most instances a most beneficial accessory to the good result rather than a *sine qua non*.

Is Milk a Factor in the Spread of Tuberculosis.—Dr. J. O. Cobb, of the United States Public Health and Marine Hospital Service, read this paper. He holds that milk is not a factor of any importance. He showed that in many countries where tuberculosis prevails milk is not used to any extent as food. The cattle of the islands of Guernsey and Jersey are free of tuberculosis but the people have it as usual. The Chinese and the Alaska indians have tuberculosis but do not use milk as an article of diet. They sometimes use it if prescribed by physicians or through living with Europeans.

Dr. A. Jacobi differed from the views expressed and said that negative assertions do not prove any-

thing against a single positive one. The literature is too rich to be overlooked. He believes in sterilization in all cases of doubt; in mixing milk from thirty or forty cows so that by dilution there may be safety in case one is infected.

Some Cases of Pus Infection Simulating Pulmonary Tuberculosis.—Dr. Robert H. Babcock, of Chicago, read this paper. The histories of five cases were given. They are believed to represent a class of cases which present considerable difficulty in differential diagnosis.

Dr. J. O. Cobb, of Detroit, Mich., in discussing Dr. Babcock's paper, said he thought that Dr. Babcock's cases are really infected pneumonias, because the profession knows that the pulmonary tissue acts as a screen and sieve to take out of the circulation any infective material in it. It is also aware that interference with a gluteal or rectal abscess of tuberculous origin often sets up a very rapid infection of the lungs. The lungs and liver are essentially the sieves for the circulation, and he thinks that is the explanation of Dr. Babcock's cases of lung consolidation in the case of an ordinary pus infection elsewhere. Now, if that pus infection elsewhere were due to streptococci and they got into the circulation and then were screened out in the lungs, then one would have a pyemia—a very rapid pyemia which would destroy the patient. But it has been brought forward that even gonococci will be washed out in the lungs and produce a consolidation and still not break down; but streptococci will invariably break down, but not always diplococcus infection. This has been illustrated from mastoid infection where it is not due to the streptococcus, for often one will have an infective pneumonia, and he thinks that is the explanation of Dr. Babcock's cases.

Dr. Babcock said that inasmuch as circulatory derangements within the abdomen may be secondary to pulmonary disease, might it not be that circulatory derangements within the lungs may be secondary to abdominal disease? He is interested in Dr. Cobb's suggestion that the abnormal pulmonary findings were due to infection. So it is; but it did not seem to Dr. Babcock that in any one of his cases there was actual lung consolidation. The dulness was not intense enough, nor were the breath sounds distinctly bronchial. It impressed him much more that there was simply some circulatory disturbance in the two first cases; that is, those cases in which there was pus infection from suppurative peritonitis. Therefore he was inclined to attribute the changes to pulmonary anemia; for if pulmonary anemia does produce relaxation and diminution in the volume of the lungs with passive decrease in the capacity of the thorax, it seemed to him that such a condition could be responsible for the slight impairment of resonance and the change of respiratory murmur noted and which was so slight as to be scarcely definable. The general condition is favorable for the production of pulmonary anemia in such cases. In the case of gall-bladder and empyema, there was unmistakable dulness in the posterior aspect of the right lung. What that was due to he could not say, he simply knows it cleared up, and it is interesting to speculate whether it was due to mechanical pressure from a distended gall-bladder or was some circulatory derangement, as a pulmonary hyperemia, depending upon the sensory irritation; or whether it was a manifestation of a lung reflex. Striker narrates a very interesting case in which he saw a woman with very distressing and alarming symptoms of pulmonary hyperemia and distention of the right heart secondary to a cholelithiasis. Relief from the pain of the cholelithiasis brought with it next morning a disappearance of the alarming symptoms. This suggested to Dr. Babcock that perhaps in this case the pulmonary findings were really due to sensory irritation—ill defined to be sure, but sensory irritation nevertheless, from the distended gall-bladder. He would like for a moment to dwell also on the importance of a leucocyte count. This has become so common that one always thinks of it and resorts to it, in any case of suspected pus infection; but in these cases, which come to the profession sometimes with symptoms very suggestive of incipient tuberculosis and in which the pulmonary findings are so vague, that one is not quite satisfied whether pulmonary disease does or does not exist—he believes the leucocyte count is of value. Leucocytosis does not exist in pulmonary tuberculosis unless there be mixed infection; and when mixed infection takes place, the pulmonary changes are so pronounced that anyone can discover them; whereas in very early tuberculosis —those cases in which there is a desire for the good of the patient to discover the disease at a time when it may be amenable to treatment—the leucocytes are not increased, but are actually diminished.

CONGRESS OF INTERNAL MEDICINE.

Twenty-first Session, held in Leipsig, April 18, 19, 20 and 21, 1904.

(Continued from Page 576.)

Physiology of Cardiac Nerves.—By means of a new method, Ascher comes to the following conclusions. The activity of the cardiac nerves depends upon the amount of nutrition. Every sudden change of temperature will diminish the irritability of the vagus; gradual lowering of the temperature will also reduce it, while raising the temperature is without effect. There is also an increased irritability if the intracardial pressure is raised, but this is soon followed by adaptation. The difference between inhibitory and accelerating nerves does not lie in the nerves themselves, but in the endbodies. These are affected also by iodothyrin, which paralyze the action of the atropine.

Inhalation of Drugs.—An active diffusion through the epithelium of the bronchi and the delicate wall of the pulmonary vessels probably occurs, for Reitz could detect many inhaled drugs in a short time in the urine and blood. Thus, much more iron could be detected in the blood when organic iron was sprayed into the throat than when it was given by mouth. Schmidt thinks that considerable absorption already occurs in the trachea.

New Diagnostic Sign of Pancreas Disease.—Since the pancreatic juice contains the only ferment which is able to digest the nuclei of tissues, A. Schmidt gives suspicious cases small pieces of meat in wafers, and then examines the feces. In severe lesions of the pancreas, the muscle remnants will appear with intact nuclei, while in other diseases or in health the nuclei will be digested.

Hemolysis.—Koeppe regards the laking of blood under various conditions as a purely physical or chemical process. The red cells are all surrounded by a membrane containing a fatty and an albuminous principle. By repeated freezing and thawing, by the addition of water and after the use of electricity, the membrane is simply torn; heat will melt the fatty constituent; acid will split it into alcohol, and fatty acid alkali will saponify it, while serum-hemolysis is brought about by disintegration of the proteid principle.

Streptococcus Serum.—Menzer employs a serum which has not been passed through animals and has seen

good results in chronic, protracted cases of muscular rheumatism and in the mixed infection of tuberculosis.

Action of Digitalis.—Brandenburg finds that besides its other properties, digitalis renders the heart muscle less susceptible toward external influences. If digitalin is injected into the heart of a frog, electric currents will no longer bring about extrasystolic contractions.

Virulence of Pneumonic Sputum.—If white mice are inoculated with one cubic centimeter of the same pneumonic sputum, they generally die within the same time, so that these animals may be used to measure the virulence of a sputum. Stuertz has made the interesting observation that the prognosis can be determined in this manner for the virulency is very high in severe or fatal cases. Exacerbations can be determined more readily this way than by physical signs and earlier than by other symptoms.

Levulosuria in Liver Disease.—In more than 80 per cent. of all hepatic cases and in less than 20 per cent. of those without liver lesion, Strauss could bring about an alimentary levulosuria. This may be a valuable aid in the diagnosis of difficult cases.

New Eye-Symptom in Diabetic Coma.—In three cases of diabetic coma, P. Krause observed a well-marked hypotonia of both bulbs 15 to 32 hours before death. In other comatose conditions this symptom was not present. The cause could not be ascertained, and it seems certain that diminution of blood-pressure and of the amount of water, or the pressure of acetone, diacetic or oxybutyric acids have nothing to do with it. The anatomical examination of the bulbs was negative.

Motor Function of the Vagus.—Three causes are generally given for diffuse esophageal dilatation: Cardiospasm, paralysis of the musculature and atrophy of the vagus. Starck tried to bring about dilatation in the dog by resecting the vagus in the neck, above and below the helus of the lung and above the cardia. The results are: Reaction in the neck and above the hilus will paralyze the musculature and thus favor dilatation. Atrophy of the vagus is only a cause if the musculature is not hypertrophied. Since this is, however, the case in most instances, vagus degeneration will rarely play an etiological rôle. No dilatation occurs if the vagus is resected beneath the hilus, since the motor fibers reach the esophagus above the hilus. The absence of relaxation of the cardia during swallowing does not form sufficient impediment to cause dilatation.

Chemistry of the Diazo Reaction.—Clemens has succeeded in obtaining the substance underlying the Ehrich diazo reaction, in concentrated form, but could not separate it from all impurities.

Fat in the Urine of Nephritis.—It was formerly supposed that the pressure of fat in the urine of patients suffering from chronic parenchymatous nephritis is caused by fatty degeneration of the cells, but Winternitz believes it is due to the fact that the renal filter permits the fat of the blood to pass through. The amount of fat may reach a very high degree.

Treatment of Hyperacidity.—Since the amount of chlorine in the feces in hyperacidity of the stomach is often abnormally low, it is safe to assume that the absorption of chlorides is very active. Leo, therefore, restricted all salt from the food, but without effect. Better results were obtained with rectal and gastric lavage with four to ten per cent. solutions of salt; the pain and hyperchlorhydria often disappeared in a short time.

Influence of Fever upon Various Diseases.—Dehio investigated the influences of fever induced by injecting peptone upon lupus, recent syphilis and acute gonorrhea. Among thirteen cases of lupus, three were cured completely. In six cases there were recurrences which were treated with the sharp spoon. In a few cases of gonorrhea, the discharge ceased completely.

Effect of Different Proteids on Diabetes.—Falta studied the influence of casein, serumalbumin-fibrin, globulin, hemoglobin and egg-albumin in four cases of severe diabetes. It seems that the sugar is most abundant with those proteids which are most rapidly decomposed (the first-mentioned members of the group). Coagulated egg-albumin seems to be more harmful than incoagulated.

Disturbances of Speech in Neurasthenia.—Four forms of disturbance of speech in neurasthenia are recognized by Gutzmann: (1) Disturbances in the memory of speech; (2) disturbances of association; (3) easy fatigue of the muscles; (4) emotional effects, and (5) disturbances of co-ordination, especially stuttering.

Estimation of Cellulose in Feces.—Simon dissolves the cellulose by boiling the feces with 50 per cent. potash-lye, and then precipitates with 96 per cent. alcohol. In constipation the cellulose seems to be used up better than under normal conditions.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON GENITO-URINARY DISEASES.

Stated Meeting, held May 18, 1904.

The President, James Pedersen, M.D., in the Chair.

Perineal Prostatectomy With Severe Cystitis, Followed One Year Later by Phosphatic Calculus; Litholapaxy; Cure.—Dr. A. A. Berg reported the case of a man, sixty years old, who came to the Mount Sinai Hospital one year ago last summer with the usual symptoms of prostatic hyperthrophy. There were from two to three ounces of residual urine. The prostate was small and atrophic rather than hypertrophic. There was considerable cystitis and the patient suffered a great deal under general anesthesia. Perineal section was made for the removal of the prostate. This gland was found to be very small, with the middle lobe about the size of a hazelnut; the operation was easily performed, lasting only twenty minutes. The drainage was retained in the bladder six days. Then the improvement in the cystitis was so evident that the drainage was removed. He continued to wash out the bladder daily with weak solution of nitrate of silver. The wound closed completely in three weeks but the patient was kept in the hospital until the cystitis showed evidences of improvement. He was then discharged with instructions to return for further bladder washings. This he failed to do. The symptoms of retention were completely relieved and there was no residual urine; he passed water with normal frequency and thought he had recovered normal conditions. The patient then was lost track of until last summer when he appeared complaining again of symptoms of cystitis. The cystoscopic examination showed a calculus a little larger than a hazelnut lying at the base of the bladder and a considerable cystitis. By irrigations of 1-5,000 silver nitrate solution the existing cystitis was reduced before operation was proceeded with. After two weeks in the hospital the cystitis improved and then, under cocaine anesthesia, with a lithotrite the stone was crushed and the particles removed with the evacuator. The cystoscopic examination showed that all the particles of stone had been removed. The patient was kept in the hospital for two weeks and his bladder repeatedly washed. Later he returned and reported that all was doing well, his urine was clear and he had no difficulty in voiding it. He got up but once at night to pass his urine and

during the day he urinates about three times. He says that he is completely cured. The case was reported as one of atrophic prostate with evidences of cystitis and subsequent formation of a calculus.

Case of Prostatism.—Dr. Edward L. Keyes, Jr., reported such a case in a patient upon whom he operated two years ago. The symptoms of prostatism only existed six weeks prior to operation. This patient had retention and a violent cystitis following. Because of the serious implication of the kidney he felt justified in advising operation. The prostate was burned down and he never saw an individual bear a perineal tube worse. The wound healed kindly and the patient was able to empty his bladder except about one-half an ounce. He was very sensitive and permitted no instrumentation until about six months later when the searcher revealed a stone. The removal of this calculus relieved all symptoms.

Complete Destruction of the Kidney by Multiple Metastatic Abscesses.—Dr. A. A. Berg said that he had presented a similar case to the Section some two months ago. The patient was a young girl, an operator, who came into the surgical service of Dr. Gerster during the month of February, 1904. The history given was that some one month before she had a paronychia on one of her fingers (this was obtained from her subsequent to the operation). For one month she had considerable pain in the right hypochondrium, with fever, chills, loss of strength and much prostration. Urination was comparatively normal, thrice daily and not at all during nights. She said that her urine was clear and never contained blood. The physical examination showed all the internal organs to be normal, but in the right hypochondrium there was a large mass, the size of two fists, very tender and hard, with the colon in front and to the inner side of it; it was immovable with respiration. Examination of the bladder with the cystoscope showed everything to be normal. The urethral orifice was normal. Bilateral catheterization was undertaken and, on the right side, the catheter left in one-half an hour drained no urine; but on the left side one-half an ounce was withdrawn. Cryoscopy of the urine from the left side showed its freezing point to be 1.7; that of the blood was .58. A tumor of the kidney, probably of suppurative type, was diagnosed and operation was advised and consented to. Upon cutting down upon the kidney it was found to be filled with multiple abscesses; no kidney tissue could be recognized as such. There were hundreds of small abscesses from the size of a pin-head to a hazelnut. There was absolutely no trace of kidney tissue visable. This, of course, accounted for there being no kidney secretion on the right side. The only cause for this condition that could be found was the paronychia and to this was attributed the suppurative process. Last summer, he said, he had operated upon a similar case but the site of infection was from an abrasion on the side of the foot from the wearing of a tight shoe. In the case presented the miliary abscesses were curetted and the cavities packed with gauze and allowed to fill up from the bottom. The patient rapidly gained in weight and in strength and has been in a healthy condition ever since.

Dr. F. Tilden Brown said that in those cases of suppurative processes in the kidney were more commonly perinephritic suppurations secondary to a streptococcus infection from some cutaneous surface. He asked if any subsequent examination had been made to ascertain whether or not the urine was now coming from the right ureter? Whether the kidney tissue that was left had been able to functionate or show any activity whatever? He said he was inclined to suspect some antecedent suppurative process in the kidney. He said it would be interesting to learn if there ever had been cases similar to this in which there was no history of urine or pus passing.

Dr. Robert T. Morris said that two years ago he split a kidney in its entire length and found a large number of abscesses in the parenchyma and he decided to risk leaving the kidney; therefore, it was drained and the patient made a good recovery, and he subsequently found the kidney was doing very good work. There must have been several hundreds of these small abscesses left that were not opened. The patient made a very good rcovery.

Dr. Howard Lilienthal said he had seen several of these cases and one he had reported several years ago in the *Annals of Surgery*, in which there were miliary abscesses in each kidney following an attack of erysipelas of the face. Repeated double nephrotomy was performed and the patient finally recovered. In the cases that he had seen the urine contained no pus at all. As a result of experimental work and post-mortem findings he said he had come to the conclusion that these metastatic abscesses were practically always found in the cortex of the kidney, and at first did not cause any changes of any note in the urine, not even albumin or casts. In such a case as reported by Dr. Berg it seemed to him likely that there must have been a plug or some sort of pressure on the ureter to account for the total absence of urine from the ureteral catheter. It was a well-known fact that in destructive processes of the kidney, when even a little bit of the kidney substance is left this remnant will secrete urine. He thought a total anuria from that side must have been of neurotic origin or from pressure of some kind upon the ureter. In regard to perinephric abscesses occurring under these circumstances he did not believe that they ever occurred as a primary infection, but always were the result of a breaking into the perinephric tissues of cortical abscesses in the kidney. He could not answer why abscesses should form in the perinephric fat as the result of metastatic invasion, but he could see every reason for believing that these abscesses might occur in the cortex. When these abscesses break down into the perinephric fat then we would have perinephric abscesses. Perinephric abscess *per se* does not occur except as secondary to suppuration in the kidney or some neighboring organ.

Dr. A. A. Berg, in answer to the question raised by Dr. Brown, answered that a subsequent cystoscopic examination had not been made. He believed the suggestion was a good one and he would carry it out, although he did not believe that much would be found. Regarding an old obstruction of the ureter as explaining the right-sided anuria, there were no symptoms of it given in the history. Some albumin and casts were found in the urine but no pus or blood and no increased urination. Examination of the mouth of the ureter in those cases where secretion of urine had been brought to an end by plugs in the ureter usually shows some slight changes, either a retraction or ulceration, *e.g.*, in a pyogenic pyonephrosis. In the case reported the ureteral orifice was absolutely normal. The catheter was introduced about 8 or 10 inches and met with no obstruction and he did not believe there was any plug in the ureter. With regard to the condition of the kidney when it was cut down upon Dr. Gerster remarked at the time that he had never seen such complete destruction of the organ. An extensive search of the remnant of the kidney was made but nothing was found, only a large number of abscesses surrounded by inflammatory tissue.

With regard to the question of a nephrotomy or a nephrectomy for metastatic miliary pyogenic emboli in the kidney, this was a wide question and it should be

remembered that pyogenic organisms act upon the kidney in many ways; they can produce a chronic contracted or a chronic diffuse nephritis like Bright's disease; such cases often do very well with incision and drainage. On the other hand pyogenic organisms might produce large infarctions of the kidney which undergo suppuration and, in such instances, he believed nephrectomy the better procedure. In the type of cases, such as presented in which there was a most complete destruction of kidney substances, a nephrotomy would be of no value. He agreed that, as a rule, perinephritic abscesses in any of these cases was the result of kidney suppuration. The kidney suppuration occurs first and then there was a perinephritic suppuration following.

Dr. F. Tilden Brown said that Dr. Lilienthal's remark about the nephritic abscesses preceding the perinephritic abscesses seemed to him to be in accord with the facts as shown in the majority of the cases, but he did not believe that the profession could accept that statement as being invariably the case. He said that it seemed to him that in view of the fact that a number of the cases were not examined after considerable perinephritic abscesses had been evacuated the condition of the kidney itself was not determined and, therefore, it could not be said that they were always normally functionating. One should not say that without exception perinephritic abscesses were secondary to abscesses in the cortical portion of the kidney. Dr. Brown reported cases of two brothers one year ago; both had perinephritic abscesses secondary to kidney lesions; examination of the kidney failed to reveal anything although the kidneys were not brought to view.

Dr. L. Bolton Bangs said he would corroborate what Dr. Brown had just stated. He had opened and drained perinephritic abscesses which had no connection, at least at the time of operation, with the kidney substance, and none subsequently because the patients had recovered and there had been no occasion to attack the kidneys except for purpose of examination.

Dr. Lilienthal said that he explained these cases by assuming that these abscesses had perforated into the perinephritic tissues. Many of these perinephric abscesses he had opened and drained and had not found it necessary to go further. But there were others that he had open and drained and had subsequently been compelled to go further, when he had found other abscesses in the kidney substance that had not been opened and had not drained.

Funiculitis.—Dr. James Pedersen presented the young man with funiculitis, whom he had shown at the March meeting of the Section. He presented him to show that under purely expectant treatment the tumefaction had considerably subsided. A specific urethritis is still present. As all attempts to relieve this, even by means of hand injection, have caused a threatened relapse of the epididymitis, all local treatment has been abandoned in favor of constitutional treatment with cod-liver oil, Russell's emulsion and iron.

A Case of Atrophy of Testis, Hardened Epididymis, Hydrocele and Varicocele.—Dr. Ramon Guiteras presented a patient, twenty-eight years old, who had had several attacks of urethritis and, on one occasion, a double epididymitis. Now his right testicle was atrophied, and there was a hardened epididymis and vas deferens on the left side with some fluid in the tunica vaginalis on both sides. The hardness of the epididymis was very peculiar when last examined. He simply presented the case as one of interest. There was also a varicocele on the left side.

Calcareous Accumulation in the Bladder and Urethra Giving Rise to Retention.—Dr. Ramon Guiteras said that two years ago a patient entered the Columbus Hospital with a diagnosis of stone in the urethra. Examining the patient under ether he was with difficulty able to pass a tunnel sound into the urethra and he found that a stone occupied the whole caliber of the urethra; he finally managed to pass the stone and enter the bladder. He then made a perineal section and, instead of finding one stone, he found the prostatic and membranous portion and part of the bulbous, filled with small calculi and pieces of calculi resembling those that had been crushed. The bladder, too, seemed to be packed with calculi in pieces, and one was about the size of a pigeon's egg. With forceps he managed to extract all the pieces of calculi without crushing them. One would have believed that a very large calculus had been previously crushed, but there was no such history given. The bladder was much thickened. With two fingers in the rectum and the other hand placed suprapubically he could feel what appeared like the crop of a fowl filled full of gravel.

(To be Continued.)

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THE SUMMER DIARRHŒAS OF INFANTS. By Dr. H. Illoway. 12mo, 150 pages. E. R. Pelton, New York.

MODERN OPHTHALMOLOGY. By Dr. Jas. Moores Ball. 8vo, 820 pages. Illustrated. F. A. Davis Co., Philadelphia.

ANTI-TYPHOID INOCULATION. By Dr. A. E. Wright. 21mo, 76 pages. Illustrated. Archibald Constable & Co., Ltd., Westminster.

THE PURIN BODIES OF FOODSTUFFS. By Dr. I. Walker Hall. Second Edition, 12mo, 201 pages. P. Blakiston's Son & Co., Philadelphia.

VETERINARY PATHOLOGY. By Drs. Friedberger and Frohner. Translated by Dr. M. H. Hayes. Volume I. 8vo, 519 pages. W. T. Keener & Co., Chicago.

DISEASES OF THE NOSE AND THROAT. By Dr. D. Braden Kyle. 8vo, 669 pages. Illustrated. W. B. Saunders & Co., Philadelphia, New York and London.

A REFERENCE HANDBOOK OF MEDICAL SCIENCES. Edited by Dr. Albert H. Buck. Volume VIII. 8vo, 784 pages. Illustrated. Wm. Wood & Co., New York.

BACTERICAL AND CLINICAL STUDIES OF DIARRHŒAL DISEASES OF INFANCY. By Drs. Simon Flexner and L. Emmett Holt. 8vo, 202 pages. The Rockefeller Institute for Medical Research.

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ROENTGEN RAYS IN THERAPEUTICS AND DIAGNOSIS. Drs. Allen Pusey and Eugene Wilson Caldwell. Second edition. 8vo, 334 pages. Illustrated. Lea Brothers & & Co., Philadelphia, New York and London.

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